

APPENDIX B – OPTIONS ASSESSMENT

A review of options for each of the 15 Wards within the Borough has been completed to inform the development of preferred options scenarios.

Appendix B: LBHF_SWMP_Options_Assessment_v02.pdf

	Measures Opportunity Assessment Scoring System
	There are opportunities for implementation of this mitigation measure within the Ward Measure should be considered in in options Assessment.
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	There are limited opportunities for implementation of this mitigation measure within the Ward Further investigation of measure will be required prior to confirmation of appropriateness for/within the Ward but should be considered within Options Assessment.
	There are no opportunities for implementation of measure within the Ward. The measure it not suitable or required to address the surface water flood risk within the Ward.
N/A	Not applicable - to be used where not other measures are identified.

0	ptions Assessment Shortlisting Criteria (see SWMP Technical Guidar	nce for Further Information)
Criteria	Description	Score
	Is it technically possible and buildable?	
	Will it be robust and reliable?	-2: Severe negative outcome
Economic	Will benefits exceed costs?	-1: Moderate negative outcome
Social	Will the community benefit or suffer from implementation of the	0: Neutral
	measure?	+1: Moderate positive outcome
Environme	 Will the environment benefit or suffer from implementation of the 	+2: High positive outcome
	measure?	
Objectives	 Will it help to achieve the objectives of the SWMP partnership? 	





War	d ID	1 College Park an	d Old Oak												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Minimal suitable buildings within the Ward.	-3	Potential costs with modification of structures and 2 installation.	-:	Aesthetic value with 1 education potential	C	Provision of habitat, water air quality treatment & noise reduction.	. 2	Depending on design, significant quantities of water could be retained locally.		1 0	No
	Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and 0 maintenance cost.	(Below ground, so does 0 not affect land use	С	Potential to discharge to groundwater with treatment measures.	C	Potential to discharge large volumes of water dependent on geology.		1 1	Yes
	Swales		Develop within open space running adjacent to roads such as the border of the playing fields along Du Cane Road.	Potential restricted by slope of land. System would need to be developed to connect to drainage network as infiltration is limited.	-5	Moderate cost with low maintenance 2 requirements.		Intrusion on playing D field area.	C	Planting can be used to enhance biodiversity value	. 1	Would attenuate discharge to surface water network: may benefit downstream areas.	ı	0 -1	No
RCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced. Limited Council land available for installation.	Limited Council land available for installation.	-:	Low cost with moderate maintenance 1 requirements.		1 Aesthetic appearance.	c	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.		0 1	Yes
SOUR	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(Reduced water supply and drainage costs with 0 operational system.		Potential health & safety issues in public 1 buildings.	C	Reduced water demand fo	r 1	Potential to retain moderate volumes from rainwater.		1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.		Low cost to set up with regular maintenance 1 requirements.		1 Increased green space.		Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.		1 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin.	Technically possible depending on location of below ground services.		Low cost to construct and maintenance would be that of 1 existing site.		construction. Health & Safety issues associated with volumes of water and 1 contaminants.	C	No alteration to environmental benefit	C	Potential to store large volumes of surface water and discharge as appropriate.		2 4	Yes
	Ponds and Wetlands		These features tend to require a supply of water. Feasibility would need to be examined. micrease pipe sizes to province adminish capacity within	Difficult with no regular source of water to replenish systems.	-5	Moderate initial cost and high cost to 2 maintain	-:	Provide amenity and education resource. Health & Safety 2 concerns.	С	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.		1 -1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.		Extensive works with high cost. Minimal maintenance.	-:	Reduced flood waters across flooding 2 hotspots.	C	No impact.	C	May only be effective for smaller, less intensive rainfall events.		1 -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-3	High cost of intrusive 2 works	-:	Disruption during 2 construction,	o	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.		1 -2	No
¥	Improved Maintenance Regimes		Inroughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance 2 regimes.		1 Limited disruption.		No impact.		Most effective for low		1 4	Yes
PATHW	Managing Overland Flows (Online Storage)		Limited potential for online storage as little open space alongside main flow paths.	Limited space	-:	Moderate initial cost with minimal maintenance 1 requirements.		Potential disruption 1 during construction		Potential disruption during	-	Potential to retain large volumes of surface water upstream of catchment.	ı	0 0	No
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Wood Lane & Wulfstan Street through lowering the road, raising pavements, in installation of speed bumps.	May encounter problems with services and access requirements.	(Moderate cost with minimal additional maintenance 0 requirements.	:	construction. Health & Safety issues associated with volumes of water and 1 contaminants.	C	No impact.	C	Effective to convey surface water in controlled manner.		2 1	Yes
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports	Incorporate into site maintenance regime.	-	Slight modification to existing maintenance 2 regimes.		1 Limited disruption.	C	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.		1 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		0 N/A		0 N/A) N/A		N/A		0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.		Develop existing communication 1 systems.		Communication issues but will provide valuable warning 1 time.		No impact.		Will help to minimise damage and risk to life provided it is accompanied with suitable linformation.			Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		rotential cost to the developer for additional measures. Complex to install in highly developed 2 areas.	-:	Reduces need for later retrofitting of 1 features.		Potential sustainability credits for implementation of features.	1	Management of surface water at site level.	·		Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding. Specifically for buildings modelled to be at risk of surface water flooding.	Potential issues with presence required to set up defences at short notice.		Low cost and can prevent significant damage to 0 properties.		property blight and responsibility for maintenance and 2 operation.		No impact.		No effect on flood volumes, however will help minimise damage and risk to life.		0 2	Yes
	Social Change, Education and Awareness			Utilise existing communication strategies and public events as well as providing updates on the council website.	,	Low cost to update website and provide 1 information.		May be issues with language barriers and less mobile residents attendance to 2 information events.		No impact.		No effect on flood volumes, however will help minimise damage and risk to life.			Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to	<u> </u>	Cost will vary depending on the system being 2 implemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- 0 up time.		No impact.		Will reduce damage to properties and help worth faster recovery.			Yes



Ward	l ID	2 Wormholt and	White City												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		where possible through planning policy.	No suitable buildings within the Ward.	-	Potential costs with modification of structures and 2 installation.	-1	Aesthetic value with education potential		Provision of habitat, water air quality treatment & noise reduction.		Depending on design, significant quantities of water could be 2 retained locally.	1	1 0	No
	Soakaways		Infiltration SuDS potentially unsuitable. Should be confirmed on a site-by-site basis where geological	Potentially limited by		Moderate initial and		Below ground, so does		Potential to discharge to groundwater with		Potential to discharge large volumes of water dependent on			
	Swales		investigations have been completed.	geology of area. Potential restricted by slope of land. System would need to be developed to connect		0 maintenance cost. Moderate cost with	C	not affect land use	0	treatment measures.		0 geology. Would attenuate discharge to	(0	No
			Develop within open space running adjacent to roads such as the border of Wormholt Park.	to drainage network as infiltration is limited.	-	low maintenance 2 requirements.	C	Intrusion on playing field area.	0	Planting can be used to enhance biodiversity value.		surface water network: may 1 benefit downstream areas.	(-1	No
SOURCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.		Low cost with moderate maintenance 1 requirements. Reduced water supply	1	Aesthetic appearance		Water quality treatment through filtration process	:	Allow for infiltration of rainfall during less intense, more 1 frequent events.	C) 3	Yes
	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.		and drainage costs with operational 0 system.	1	Potential health & safety issues in public buildings.		Reduced water demand for buildings.		Potential to retain moderate 1 volumes from rainwater.	1	. 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	Above ground implementation with slight adjustment of the surface drainage network.		Low cost to set up with regular maintenance 1 requirements.	1	Increased green space.	0	Increase biodiversity with water quality benefits.	:	Minor at individual level, widespread implementation 2 needed to achieve benefits.	1	<u>.</u> 5	Yes
	Detention Basins			Adjacent to hotspot, so contouring of the land to encourage flow would be required.		Low cost to construct and maintenance would be that of 1 existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.		No alteration to environmental benefit		Potential to store large volumes of surface water and discharge 0 as appropriate.	2	2 4	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined. Increase pipe sizes to provide additional capacity within	Difficult with no regular source of water to replenish systems.	-	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity,	;	Potentially could retain large 2 volumes of surface water.	1	-1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.		May only be effective for smaller, less intensive rainfall 0 events.	-1	<u>.</u> -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be	Complex sewer network with multiple		High cost of intrusive		Disruption during		Reduced pressure of combined network through		Would act to provide additional			
	Improved Maintenance Regimes			connections Adjust existing maintained regime to focus on key flooding areas.	-	2 works Slight modification to existing maintenance 2 regimes.		construction, Limited disruption.		reduced inflow. No impact.		1 capacity and attenuate flows. Most effective at low magnitude 0 events.	1	-2	No Yes
PATHWAY	Managing Overland Flows (Online Storage)		The main flow paths are major roads. In order to reduce volume of water on the road, modify adjoining roads	Potentially complex as some roads have moderate gradients.		Moderate initial cost with minimal maintenance 0 requirements.		Potential disruption during construction		Potential disruption during construction		Potential to retain large volumes of surface water O upstream of catchment.	2	. 3	Yes
	Managing Overland Flows (Preferential Flow paths)		Main flow routes are major roads. Limited potential for online storage of significant volumes that does not affect major transport routes.	defined topography will limit the redirection of overland flow.	-	Moderate cost with minimal additional maintenance 2 requirements.	-1	Disruption during construction. Health & Safety issues associated with volumes of water and contaminants.	0	No impact.	ı	Effective to convey surface O water in controlled manner.	2	· 1	No
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime of schools.		Slight modification to existing maintenance 2 regimes.	1	Limited disruption.	0	Increased infiltration, reduced need for irrigation.	:	Reduced surface water runoff from site during high intensity 1 events.	C) 4	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		0 N/A		N/A	0	N/A		0 N/A	(0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.		Develop existing communication 1 systems.	1	Communication issues but will provide valuable warning time.	0	No impact.	ı	Will help to minimise damage and risk to life provided it is accompanied with suitable 0 information.	C) 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		Potential cost to the developer for additional measures. Complex to install in highly developed 2 areas.	-1	Reduces need for later retrofitting of features.		Potential sustainability credits for implementation of features.	:	Management of surface water 1 at site level.	1	. 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	,	Low cost and can prevent significant damage to 0 properties.	2	property blight and responsibility for maintenance and operation.	0	No impact.		No effect on flood volumes, however will help minimise O damage and risk to life.	C) 2	Yes
	Social Change, Education and Awareness		enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of	Utilise existing communication strategies and public events as well as providing updates on the council website.		Low cost to update website and provide 1 information.	_2	May be issues with language barriers and less mobile residents attendance to information events.	0	No impact.		No effect on flood volumes, however will help minimise 0 damage and risk to life.	() 3	Yes
	Improved Resilience and Resistance Measures			Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being 2 implemented.	0	Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.	0	No impact.		Will reduce damage to properties and help worth 0 faster recovery.	() 2	Yes



War	d ID	3 Shepherd's Bus	h Green												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		where possible through planning policy.	Potential issues with structures of buildings.		Potential costs with modification of structures and installation.	-1	Aesthetic value with 1 education potential	0	Provision of habitat, water air quality treatment & noise reduction.	1	Depending on design, significant quantities of water 2 could be retained locally.		1 1	Yes
	Soakaways		Infiltration SuDS potentially unsuitable. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.		Moderate initial and 0 maintenance cost.	(Below ground, so does not affect land Duse	0	Potential to discharge to groundwater with treatment measures.	(Potential to discharge large volumes of water dependent on geology.		0 0	No
	Swales			System would need to be developed to connect to drainage network as infiltration is limited. Would coincide with a key overland flow route.		Moderate cost with low maintenance 0 requirements.	(Intrusion onto park Jarea.	0	Planting can be used to enhance biodiversity value.	1	Would attenuate discharge to surface water network: may benefit downstream areas.		0 1	Yes
SOURCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.		Low cost with moderate maintenance 1 requirements.	1	1 Aesthetic appearance.	0	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more 1 frequent events.		0 3	Yes
Σ	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new	Can be easily designed into new build. More difficult to retrofit.		supply and drainage costs with operational system.		Potential health & safety issues in public 1 buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate I volumes from rainwater.		1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.		Low cost to set up with regular maintenance 1 requirements.	<u>.</u>	Increased green 1 space.	0	Increase biodiversity with water quality benefits.		Minor at individual level, widespread implementation needed to achieve benefits.		1 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin around Brook Green.	Technically possible depending on location of below ground services.		Low cost to construct and maintenance would be that of 1 existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit	(Potential to store large volumes of surface water and discharge as appropriate.		2 4	Yes
	Ponds and Wetlands		Enhance the capacity of the existing pond in Hammersmith Park to be able to attenuate additional volumes of surface water runoff.	Enhance existing pond.		Moderate initial cost and high cost to 1 maintain	-1	Provide amenity and education resource. Health & Safety I concerns.	0	Provide habitat diversity.	2	Potentially could retain large 2 volumes of surface water.		1 3	Yes
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.		Extensive works with high cost. Minimal 2 maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	(May only be effective for smaller, less intensive rainfall pevents.	-	1 -5	No
	Separation of Foul and Surface Water Sewers		rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections		High cost of intrusive 2 works	-2	Disruption during 2 construction,	0	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.		1 -2	. No
۷A۷	Improved Maintenance Regimes		Inroughout ware concentrating on nooding notspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	maintained regime to focus on key flooding areas.		Slight modification to existing maintenance 2 regimes.	1	1 Limited disruption.	0	No impact.	(Most effective for low magnitude events.		1 4	Yes
PATH	Managing Overland Flows (Online Storage)		Limited opportunity as main flow paths are defined by road structures. Potential to store water in tanks below ground.	Storage below road level. Likely to have issues with services.		High initial cost and maintenance 2 requirements.	,	Potential disruption during construction.		Reduced contaminates above ground.	,	Potential to retain large volumes of surface water at critical locations.		2 -1	No
	Managing Overland Flows (Preferential Flow paths)		Main flow routes are major roads. Limited potential for online storage of significant volumes that does not affect major transport routes.	not desirable. Dense development and defined topography will limit the redirection of overland flow.		Moderate cost with minimal additional maintenance 2 requirements.		Disruption during construction. Health & Safety issues associated with volumes of water and contaminants.		No impact.		Effective to convey surface Water in controlled manner.		2 -1	No
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Through education and planning policy.		2 Minimal	1	1 Limited disruption.	0	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity Levents.		1 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		0 N/A	(N/A	0	N/A	(N/A		0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.		Develop existing communication 1 systems.	1	Communication issues but will provide valuable warning I time.	0	No impact.	(Will help to minimise damage and risk to life provided it is accompanied with suitable Dinformation.		0 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		developer for additional measures. Complex to install in highly developed 2 areas.	-3	Reduces need for later retrofitting of Legal teachers.	0	Potential sustainability credits for implementation of features.	1	Management of surface water at site level.		1 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.		Low cost and can prevent significant damage to 0 properties.		property blight and responsibility for maintenance and 2 operation.	0	No impact.	(No effect on flood volumes, however will help minimise I damage and risk to life.		0 2	Yes
	Social Change, Education and Awareness		information from one property owner to another.	strategies and public events as well as providing updates on the council website.		Low cost to update website and provide 1 information.	-	May be issues with language barriers and less mobile residents attendance to 2 information events.	0	No impact.	(No effect on flood volumes, however will help minimise damage and risk to life.		0 3	Yes
	Improved Resilience and Resistance Measures			Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being 2 implemented.	(Minimal disruption, but may blight houses if features are obvious. Reduce clean- dup time.	0	No impact.	(Will reduce damage to properties and help worth of safet recovery.		0 2	Yes



War	ID	4 Askew													
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Infiltration SuDS potentially unsuitable. Should be	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and Linstallation.	-1	Aesthetic value with education potential	0	Provision of habitat, water air quality treatment & noise reduction. Potential to discharge to	2	Depending on design, significant quantities of water could be retained locally. Potential to discharge large		1	Yes
	Soakaways		confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.		Moderate initial and maintenance cost.		Below ground, so does not affect land use	0	groundwater with treatment measures.		volumes of water dependent on geology.	(0	No
	Swales		Develop within open space running adjacent to roads	the park is less subject to surface water flooding. The likely effect would be		Moderate cost with low maintenance		Intrusion on park		Planting can be used to		Would attenuate discharge to surface water network: may		0	NO
			such as the border of Wendell Park.	minimal.	-2	requirements.	(area.	0	enhance biodiversity value.	1	benefit downstream areas.	(-1	No
JRCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance L requirements.	1	Aesthetic appearance.	0	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	() 3	Yes
SOL	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.	•	L 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance I requirements.	1	Increased green space.	0	Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.	<u>.</u>	L 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Potential to develop in Wendel Park.	Technically possible through use of existing flow paths.	1	Low cost to construct and maintenance would be that of Lexisting site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit	C	Potential to store large volumes of surface water and discharge as appropriate.	:	2 4	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-72	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	:	.1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	12	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	C	May only be effective for smaller, less intensive rainfall events.		L -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be	Complex sewer network with multiple		High cost of intrusive		Disruption during		Reduced pressure of combined network		Would act to provide additional			
NAY	Improved Maintenance Regimes		retained at site level. Throughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	connections Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance regimes.		construction,	0	through reduced inflow. No impact.		Capacity and attenuate flows. Suitable for low magnitude events.	-		Yes
PATHV	Managing Overland Flows		Limited opportunity as main flow paths are defined by	Storage below road level. Likely to have		High initial cost and maintenance		Potential disruption	-	Reduced contaminates		Potential to retain large volumes of surface water at			
	(Online Storage) Managing Overland Flows (Preferential Flow paths)		basements. Large alterations may be required to	May encounter problems with services and access	-2	Moderate cost with minimal additional maintenance	-2	during construction. USI approvide uning construction. Health & Safety issues associated with volumes of water and		above ground.		critical locations. Effective to convey surface	<u>:</u>	-2	No
	Land Management Practices		contain the anticipated volumes of water. Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	requirements. Incorporate into site maintenance regime.	- (Slight modification to existing maintenance regimes.	-1	contaminants. Limited disruption.		No impact. Increased infiltration, reduced need for irrigation.		water in controlled manner. Reduced surface water runoff from site during high intensity events.			Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	(N/A	(N/A	0	N/A	0	N/A	(0	No
	Improved Weather Warning			Utilise existing alert procedures.	1	Develop existing communication L systems.	1	Communication issues but will provide valuable warning time.	0	No impact.	C	Will help to minimise damage and risk to life provided it is accompanied with suitable information.	() 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		rotential cost to the developer for additional measures. Complex to install in highly developed 2 areas.	-1	Reduces need for later retrofitting of features.		Potential sustainability credits for implementation of features.		Management of surface water at site level.		3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and operation.	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 2	Yes
	Social Change, Education and Awareness		opportunities. In areas with a large migration of	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide tinformation.	2	May be issues with language barriers and less mobile residents attendance to	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 31	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to		Cost will vary depending on the system being pimplemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.) 21	Yes



War	rd ID	5 Ravenscourt Pa	rk												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Infiltration SuDS potentially unsuitable. Should be	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and 1 installation.		Aesthetic value with education potential	0	Provision of habitat, water air quality treatment & noise reduction. Potential to discharge to	2	Depending on design, significant quantities of water could be retained locally. Potential to discharge large	1	. 1	Yes
	Soakaways		confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and maintenance cost.	0	Below ground, so does not affect land use	0	groundwater with treatment measures.	C	volumes of water dependent on geology.	(0	No
	Swales		Limited open space alongside flow routes to implement these.	Limited open space alongside flow routes to implement these.	-2	Moderate cost with low maintenance requirements.		Disruption to limited space.		Planting can be used to enhance biodiversity value.	1	Would attenuate discharge to surface water network: may benefit downstream areas.	() -1	No
	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance 1 requirements.	1	Aesthetic appearance.	0	Water quality treatment through filtration process/	1	Allow for infiltration of rainfall during less intense, more frequent events.	() 3	Yes
SOURCE	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.	1	. 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	Above ground implementation with slight adjustment of the surface drainage network.		Low cost to set up with regular maintenance		Increased green space.		Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.	1	1 5	Yes
	Detention Basins		Temporary flood storage area utilising the playground area of The Godolphin & Latymer School .	Lower ground levels and allow flow from northern area. Drain at reduced rate from area.	1	construct and maintenance would be that of existing site. Clean-up following storm I required.	0	Disruption during construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit.	C	Potential for moderate volumes of storage.	1	. 2	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	1	-1	No
	Increasing Capacity in Drainage Systems		increase pipe sizes to provide additional capacity within the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	C	May only be effective for smaller, less intensive rainfall events.	-1	L -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-3	High cost of intrusive 2 works	-2	Disruption during	0	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.	1	-2	No
ΑY	Improved Maintenance Regimes		Inroughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.	-	Slight modification to existing maintenance regimes.	1	Limited disruption.		No impact.		Suitable for low magnitude	1	4	Yes
PATHW	Managing Overland Flows (Online Storage)		Limited opportunity to create bunds along key flow routes.	Construction of bunds with appropriate drainage.	-	Moderate initial cost with minimal maintenance prequirements.		Potential disruption during construction.	0	Potential disruption during construction.		Limited opportunity to retain			No
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Perrers Road, Atwood Road etc. through lowering the road, raising pavements, in installation of speed humps.	May encounter	(Moderate cost with minimal additional maintenance		construction. Health & Safety issues associated with volumes of water and contaminants.	0	No impact.		Effective to convey surface water in controlled manner.		1	Yes
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime.		Slight modification to existing maintenance 2 regimes.		Limited disruption.		Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.	1		Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		N/A	0	N/A	0	N/A		N/A		0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication 1 systems.	1	Communication issues but will provide valuable warning time.	0	No impact.	C	Will help to minimise damage and risk to life provided it is accompanied with suitable information.	() 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.	2	rotential cost to the developer for additional measures. Complex to install in highly developed 2 areas.		Reduces need for later retrofitting of features.		Potential sustainability credits for implementation of features.	1	Management of surface water at site level.	1		Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and operation.	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide I information.	2	May be issues with language barriers and less mobile residents attendance to information events.	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being pimplemented.	0	Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.	0	No impact.		Will reduce damage to properties and help worth faster recovery.	()	Yes

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War	IID	6 Hammersmith	Broadway												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof	Assessment	Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and installation.		Aesthetic value with education potential		Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water could be retained locally.	1	1	Yes
	Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and maintenance cost.	(Below ground, so does not affect land use	0	Potential to discharge to groundwater with treatment measures.	(Potential to discharge large volumes of water dependent on geology.	1	1	Yes
	Swales		Limited open space alongside flow routes to implement these.	Limited open space alongside flow routes to implement these.	-2	Moderate cost with low maintenance requirements.	(Disruption to limited space.	0	Planting can be used to enhance biodiversity value.	1	Would attenuate discharge to surface water network: may benefit downstream areas.	C	-1	No
ш	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance requirements.	1	L Aesthetic appearance.	0	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	C	3	Yes
SOURC	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate Lyolumes from rainwater.	1	3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	above ground implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance requirements.		Increased green L space.		Increase biodiversity with water quality benefits.		Minor at individual level, widespread implementation 2 needed to achieve benefits.	1	. 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Potential to develop a temporary basin in Lurnivall Gardens.	Technically possible depending on location of below ground services. Diversion of flows required.	C	Moderate cost to construct and maintenance would be that of existing site.	(construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit.	(Potential to store large volumes of surface however not likely to influence main flooding hotspots.	C	0	No
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined. Increase pipe sizes to province additional capacity	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	1	-1	No
	Increasing Capacity in Drainage Systems		within the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	(May only be effective for smaller, less intensive rainfall events.	-1	-5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	_	High cost of intrusive	_	Disruption during		Reduced pressure of combined network through reduced inflow.		Would act to provide additional		1	No
*	Improved Maintenance Regimes		Throughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance regimes.		Limited disruption.		No impact.		Most effective for low		-2	Voc
PATHW/	Managing Overland Flows (Online Storage)		conveyance. Designate streets that have a high tendency towards surface water ponding (Cambridge Grove, Leamore Street) to flood during extreme events. Pump water away once storm has passed.	Modification of drainage network and flow to site.		Minor initial cost with minimal maintenance requirements.	1	Potential disruption during construction and safety concerns I with deep waters.		No impact.		Potential to retain large volumes of surface water in critical areas.		4	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Nigel Playfair Avenue, Ravenscourt Road, through lowering the road, raising pavements, in	May encounter		Moderate cost with minimal additional maintenance		construction. Health & Safety issues associated with volumes of water and contaminants.				Effective to convey surface	-	1	
	Land Management Practices		Concuraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.		2	Slight modification to existing maintenance regimes.	1	Limited disruption.		No impact. Increased infiltration, reduced need for irrigation.		Reduced surface water runoff from site during high intensity Levents.	1	. 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		N/A		N/A	0	N/A		N/A		0	No
	Improved Weather Warning			Utilise existing alert procedures.	1	Develop existing communication systems.	1	Communication issues but will provide valuable warning I time.	0	No impact.	(Will help to minimise damage and risk to life provided it is accompanied with suitable information.	C	2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the	2	rotential cost to the developer for additional measures. Complex to install in highly developed areas.		Reduces need for later retrofitting of teatures.		Potential sustainability credits for implementation of features.		Management of surface water at site level.	1	. 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	C	Low cost and can prevent significant damage to properties.		considerations of property blight and responsibility for maintenance and poperation.		No impact.		No effect on flood volumes, however will help minimise damage and risk to life.	C	2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide information.	3	May be issues with language barriers and less mobile residents attendance to prior to the conference of the conference o	n	No impact.	(No effect on flood volumes, however will help minimise I damage and risk to life.	ſ	3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments	Relatively simple to		Cost will vary depending on the system being implemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.	C	2	Yes

	7 Addison Initial			Technical		Economic		Social	I		-11			Carry
Measure	Assessment	Location / Specific Details	Technical	Score	Potential costs with	Score	Social	Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	forward
		Potential to retrofit to council owned properties			modification of				Provision of habitat, water		Depending on design, significant	:		l I
Green Roof		including schools. Encourage use in new developments	Potential issues with		structures and		Aesthetic value with		air quality treatment &		quantities of water could be			
		where possible through planning policy.	structures of buildings.	-1	I installation.	-	1 education potential	(noise reduction.	2	Potential to discharge large	1	1	Yes
Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological	Potentially limited by		Moderate initial and		Below ground, so does		Potential to discharge to groundwater with		Potential to discharge large volumes of water dependent on			
,		investigations have been completed.	geology of area.	(maintenance cost.		0 not affect land use	(treatment measures.	C	geology.	1	1	Yes
			Limited open space		Moderate cost with						Would attenuate discharge to			
Swales		Limited open space alongside flow routes to implement	alongside flow routes		low maintenance		Disruption to limited		Planting can be used to		surface water network: may			
		these.	to implement these.	-2	requirements.		0 space.	(enhance biodiversity value.	1	benefit downstream areas.	0	-1	No
			Traffic loads may limit											
Permeable Paving		Conceile as consumer the second condition and decord	this to smaller roads		Low cost with						Allow for infiltration of rainfall			
		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the	and car parking areas. Method of discharge		moderate maintenance				Water quality treatment		during less intense, more			
		borough when roads are due to be re surfaced.	depended on geology.	1	requirements.		1 Aesthetic appearance	(through filtration process	1	frequent events.	0	3	Yes
		Potentially applicable to all new development and can be	Con he easily designed		Reduced water supply		Potential health &							
Rainwater Harvesting		introduced retrospectively. Encourage use in new	Can be easily designed into new build. More		and drainage costs with operational		safety issues in public		Reduced water demand for		Potential to retain moderate			
		developments where possible through planning policy.	difficult to retrofit.	(system.		1 buildings.	(buildings.	1	volumes from rainwater.	1	3	Yes
			implementation with		Low cost to set up									
Rain gardens and tree planters		Throughout Ward where existing tree pits could be	slight adjustment of the		with regular						Minor at individual level,			
rain gardens and tree planters		expanded.	surface drainage		maintenance				Increase biodiversity with		widespread implementation			
			network.	1	l requirements.		1 Increased green space.	(water quality benefits.	2	needed to achieve benefits.	1	5	Yes
						1	construction. Health &							
Dotontion Preime			Technically possible		Low cost to construct	1	Safety issues							
Detention Basins		Potential to develop open spaces to have a	depending on location		and maintenance	1	associated with		No observation :		Potential to store large volumes			
		multifunctional use through lowering of ground levels to form a basin.	of below ground services.	1	would be that of Lexisting site.		volumes of water and contaminants.		No alteration to environmental benefit	,	of surface water and discharge as appropriate.	,	1	Yes
		iorii a pasiii.	SCI VICES.	<u>.</u>	calating site.		L CONTAININGINGS.	<u> </u>	covironmental penent		из арргорнате.	1	4	163
			Diff:		Administration of the Control	1	Provide amenity and							
Ponds and Wetlands		These features end to require a supply of water.	Difficult with no regular source of water to		Moderate initial cost and high cost to		education resource. Health & Safety				Potentially could retain large			
		Feasibility would need to be examined.	replenish systems.	-2	2 maintain	-	2 concerns.	(Provide habitat diversity,	2	volumes of surface water.	1	-1	No
		increase pipe sizes to provide additional capacity within							•					
Increasing Capacity in Drainage		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events	Complex as numerous		Extensive works with		Reduced flood waters				May only be effective for			
Systems		capacity is quickly reached therefore this is unlikely to	connections to		high cost. Minimal		across flooding				smaller, less intensive rainfall			
		have a notable effect.	combined network.	-2	maintenance.	4	2 hotspots.	(No impact.	C	events.	-1	-5	No
		Areas could be connected to a separate surface water												
		network, which is discharged to detention basin, or other												
Separation of Foul and Surface Water Sewers		large SuDS feature, prior to reconnection to the Thames												
water sewers		network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at	Complex sewer network with multiple		High cost of intrusive		Discuption during		Reduced pressure of combined network through		Would act to provide additional			
		site level.	connections	-2	works	-	Disruption during 2 construction,		reduced inflow.	1	capacity and attenuate flows.	1	-2	No
		Throughout Ward concentrating on flooding hotspots.	Adjust existing											
Improved Maintenance Regimes		More regular inspection and maintenance of the current sewer system to remove debris and increase	maintained regime to focus on key flooding		Slight modification to existing maintenance						Most effective at low magnitude			
		conveyance.	areas.	2	regimes.		1 Limited disruption.	(No impact.	c	events.	1	4	Yes
Managing Overland Flows (Online		Limited opportunity as main flow paths are defined by	Storage below road		High initial cost and						Potential to retain large volumes	5		
Storage)		road structures. Potential to store water in tanks below ground.	level. Likely to have	_	maintenance		Potential disruption		Reduced contaminates above ground.		of surface water at critical locations.			Nic
9,		ground.	issues with services.	-2	requirements.	-	2 during construction.		above ground.	-	locations.	2	-1	NO
			l				construction. Health &							
Managing Overland Flows		Hammersmith Grove, Netherwood Road, Lakeside Road,	nrohlems with services		Moderate cost with minimal additional		associated with							
(Preferential Flow paths)			and access		maintenance		volumes of water and				Effective to convey surface			
		pavements, to increase storage capacity within the road.		C	requirements.	-	1 contaminants.	(No impact.	c	water in controlled manner.	2	1	Yes
-		Encouraging greening of impermeable areas where												
Land Management Practices		possible: driveways, ground adjacent to walkways, school			Slight modification to	1					Reduced surface water runoff			
		grounds etc. implement requirement into planning	Incorporate into site		existing maintenance	1			Increased infiltration,		from site during high intensity			
		policy. Encourage aeration of parks and sports fields.	maintenance regime.	2	2 regimes.		1 Limited disruption.	(reduced need for irrigation.	1	events.	1	5	Yes
Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	,	N/A		0 N/A	,	N/A	,	N/A	0	_	No
		-	19/5		717/7		U 14/ A		ALL STATE OF THE S			1	0	
		Develop upon existing warning systems to alert			Develop - 12-4	1	Communication				Will help to minimise damage			
Improved Weather Warning		properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more	Utilise existing alert		Develop existing communication	1	Communication issues but will provide				and risk to life provided it is accompanied with suitable			
		affective if coupled with community education.	procedures.	1	L systems.		1 valuable warning time.		No impact.		information.	0	2	Yes
		, , , , , , , , , , , , , , , , , , , ,	ĺ		Potential cost to the	1	Ū, ioi							
Dianning Policies to Influence		Throughout Ward; Set policy requirements for	Policy requirement for attenuation in the		developer for additional measures.	1								
Planning Policies to Influence Development		attenuation from properties throughout the Ward, and	Ward and resilience		Complex to install in	1			Potential sustainability					
		resilience measures for properties in flooding hotspots.	measures for		highly developed	1	Reduces need for later		credits for implementation		Management of surface water at	t		
			properties in hotspots.	2	areas.	-	retrofitting of features.	(of features.	1	site level.	1	3	Yes
		Use these in areas where buildings can not be easily	Potential issues with			1	property blight and							
Temporary or Demountable Flood		made resistant or resilient to flooding. Specifically for	presence required to		Low cost and can	1	responsibility for				No effect on flood volumes,			
Defences		buildings modelled to be at risk of surface water	set up defences at short		prevent significant		maintenance and		Na immat		however will help minimise	_	_	Va-
		flooding.	notice.	(damage to properties.		2 operation.		No impact.		damage and risk to life.	0	2	Yes
		Update website, leaflet drops, classes at local schools to	Utilise existing			1	L							
Social Change, Education and		enhance knowledge and understanding of flood risk. Will				1	May be issues with							
Awareness		be dependent on community engagement opportunities.	strategies and public events as well as		low cost to undata	1	language barriers and less mobile residents				No effect on flood volumes,			
		In areas with a large migration of population it may be difficult to undertake / pass on information from one	providing updates on		Low cost to update website and provide	1	attendance to				however will help minimise			
		property owner to another.	the council website.	1	I information.	<u> </u>	2 information events.	<u> </u>	No impact.	c	damage and risk to life.	0	3	Yes
		Individual property flood resistance / resilience measures												
Improved Resilience and		could be installed such as demountable flood barriers, air	retrofit features to		Cost will vary	1	Minimal disruption,				Marill and the desired in			
Resistance Measures		brick covers, tiled flooring . Applicable to all new developments	properties and incorporate into		depending on the system being		but may blight houses if features are obvious.				Will reduce damage to properties and help worth faster	.		
1		and could be retrofitted to vulnerable properties.	building design.	-	implemented.		0 Reduce clean-up time.	,	No impact.	,	recovery.		,	Yes



War	d ID	8 Avonmore and I	Brook Green												
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and I installation.	-1	Aesthetic value with 1 education potential		Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water could be retained locally.	1	1	Yes
	Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and maintenance cost.	(Below ground, so does not affect land use	0	Potential to discharge to groundwater with treatment measures.	0	Potential to discharge large volumes of water dependent on geology.	1	1	Yes
	Swales		Limited open space alongside flow routes to implement these.	Limited open space alongside flow routes to implement these.	-2	Moderate cost with low maintenance requirements.	(Disruption to limited 0 space.		Planting can be used to enhance biodiversity value.		Would attenuate discharge to surface water network: may benefit downstream areas.	C	-1	No
Ē	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge depended on geology.	<u>:</u>	Low cost with moderate maintenance 1 requirements.	-	1 Aesthetic appearance		Water quality treatment through filtration process		Allow for infiltration of rainfall during less intense, more frequent events.	C	3	Yes
SOURC	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(and drainage costs with operational 0 system.		Potential health & safety issues in public 1 buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.	1	. 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.		Low cost to set up with regular maintenance 1 requirements.	-	1 Increased green space.		Increase biodiversity with water quality benefits.		Minor at individual level, widespread implementation needed to achieve benefits.	1	. 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin.	Technically possible depending on location of below ground services.	<u>:</u>	Low cost to construct and maintenance would be that of 1 existing site.	-	construction. Health & Safety issues associated with volumes of water and 1 contaminants.		No alteration to environmental benefit		Potential to store large volumes of surface water and discharge as appropriate.	2	4	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-:	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity,		Potentially could retain large volumes of surface water.	1	1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.		Reduced flood waters across flooding 2 hotspots.	0	No impact.		May only be effective for smaller, less intensive rainfall events.	-1	-5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-	High cost of intrusive 2 works		Disruption during 2 construction,	0	Reduced pressure of combined network through reduced inflow.		Would act to provide additional capacity and attenuate flows.	1	-2	No
нмау	Improved Maintenance Regimes		Throughout Ward concentrating on flooding notspots.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance 2 regimes.		1 Limited disruption.		No impact.		Most effective at low magnitude events.	1	4	Yes
PAT	Managing Overland Flows (Online Storage)		Creation of bunds to retain flood water by intercepting main flow routes from the park: west of Braybrook Street, north of the prison and sports centre.	Construction of bunds with appropriate drainage.	2	with minimal maintenance requirements.	<u>.</u>	Potential disruption 1 during construction		Potential disruption during construction		Potential to retain large volumes of surface water upstream of catchment.	2	5	Yes
	Managing Overland Flows (Preferential Flow paths)		Limited opportunity to create bunds along key flow routes.	Construction of bunds with appropriate drainage.	(with minimal maintenance D requirements.	(Potential disruption O during construction.	0	Potential disruption during construction.	0	Limited opportunity to retain volumes of surface water.	O	0	No
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime.	i	Slight modification to existing maintenance 2 regimes.	-	1 Limited disruption.	0	Increased infiltration, reduced need for irrigation.		Reduced surface water runoff from site during high intensity events.	1	. 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	(0 N/A	(0 N/A	0	N/A	0	N/A	C	0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication 1 systems.	<u>.</u>	Communication issues but will provide 1 valuable warning time.	0	No impact.		Will help to minimise damage and risk to life provided it is accompanied with suitable information.	0	2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.	Ž.	developer for additional measures. Complex to install in highly developed 2 areas.	-:	Reduces need for later 1 retrofitting of features.		Potential sustainability credits for implementation of features.		Management of surface water at site level.	1	3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding. Specifically for buildings modelled to be at risk of surface water flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant D damage to properties.		property blight and responsibility for maintenance and 2 operation.	0	No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.	0	2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.			Low cost to update website and provide 1 information.		May be issues with language barriers and less mobile residents attendance to 2 information events.	0	No impact.		No effect on flood volumes, however will help minimise damage and risk to life.	0	3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being 2 implemented.		Minimal disruption, but may blight houses if features are obvious. O Reduce clean-up time.	0	No impact.		Will reduce damage to properties and help worth faster recovery.	O		Yes

War	d ID	9 Fulham Reach													
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof	Assessment	Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Suitability of infiltration SuDS is uncertain. Should be	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and installation.	-1	Aesthetic value with leducation potential		Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water 2 could be retained locally.	1	1 1	Yes
	Soakaways		confirmed on a site-by-site basis where geological	Potentially limited by		Moderate initial and		Below ground, so does		Potential to discharge to groundwater with		Potential to discharge large volumes of water dependent on			
	Swales		investigations have been completed. Develop within open space running adjacent to Field Road.	geology of area. System would need to be developed to connect to drainage network as infiltration is limited.	C	Moderate cost with low maintenance requirements.		Intrusion on open green area. Health and safety concerns.		treatment measures. Planting can be used to enhance biodiversity value.		geology. Would attenuate discharge to surface water network and may benefit downstream areas.	1	1 2	Yes
JRCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance requirements.	1	L Aesthetic appearance.		Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	() 3	Yes
SOI	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	C	Reduced water supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate Lyolumes from rainwater.	1	1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance requirements.	1	L Increased green space.	0	Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation 2 needed to achieve benefits.	1	1 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Car park along Field Road, green space around Strode Road & Purcell Crescent.	Technically possible depending on location of below ground services.	1	Low cost to construct and maintenance would be that of existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	Increase biodiversity with water quality benefits.	2	Potential to store large volumes of surface water and discharge as appropriate.	2	2 6	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large	1	1 -1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	(May only be effective for smaller, less intensive rainfall penns.	-1	1 -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-5	High cost of intrusive	-5	Disruption during 2 construction,	0	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.	1	1 -2	No
IAY	Improved Maintenance Regimes		Throughout Ward concentrating on Hooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.	2	Slight modification to existing maintenance regimes.		L Limited disruption.		No impact.		Most effective for low		1 4	Yes
PATHW	Managing Overland Flows (Online Storage)		Creation of bunds to retain flood water by intercepting main flow routes in Bayonne Park.	Construction of bunds with appropriate drainage.	1	moderate initial cost with minimal maintenance requirements.	1	Potential disruption	0	Potential disruption during construction.	(Potential to retain large volumes of surface water Jupstream of catchment.	1	1 3	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Lugran Avenue & Aspenlea Road through lowering the road, raising pavements.	May encounter problems with services and access requirements.	C	Moderate cost with minimal additional maintenance requirements.	-1	construction. Health & Safety issues associated with volumes of water and L contaminants.	0	No impact.	(Effective to convey surface) water in controlled manner.	1	1 0	No
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into planning	2	Slight modification to existing maintenance regimes.	1	Limited disruption.	0	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity Levents.	1	1 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	ſ	N/A	(N/A	0	N/A	(N/A	(0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication systems.	1	Communication issues but will provide valuable warning I time.		No impact.		Will help to minimise damage and risk to life provided it is accompanied with suitable information.	() 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.	2	developer for additional measures. Complex to install in highly developed areas.	-1	Reduces need for later retrofitting of features.	0	Potential sustainability credits for implementation of features.	1	Management of surface water at level.	1	1 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	C	Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and poperation.	0	No impact.	(No effect on flood volumes, however will help minimise damage and risk to life.	() 2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide information.	2	May be issues with language barriers and less mobile residents attendance to prior to the strength of the stre	0	No impact.	(No effect on flood volumes, however will help minimise damage and risk to life.) <u> </u>	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being implemented.	(Minimal disruption, but may blight houses if features are obvious. Reduce clean-) up time.	0	No impact.	(Will reduce damage to properties and help worth faster recovery.	() 2	Yes



Ward	d ID	10 North End													
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Suitability of infiltration SuDS is uncertain. Should be	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and 1 installation.	-1	Aesthetic value with education potential	C	Provision of habitat, water air quality treatment & noise reduction. Potential to discharge to	2	Depending on design, significant quantities of water could be retained locally. Potential to discharge large		1 1	Yes
	Soakaways		confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and maintenance cost.	C	Below ground, so does not affect land use	C	groundwater with treatment measures.	0	volumes of water dependent on geology.		1 1	Yes
	Swales		Limited open space adjacent to flow paths and roads.	Limited by space.	-2	Moderate cost with low maintenance requirements.	C	Loss of space. Provision of urban greening,	C	Planting can be used to enhance biodiversity value.	. 1	Would attenuate discharge to surface water network: may benefit downstream areas.		0 -1	No
30	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance I requirements. Reduced water	1	Aesthetic appearance.	C	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	1	0 3	Yes
SOUR	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(supply and drainage costs with Operational system.	1	Potential health & safety issues in public buildings.	C	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.		1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance I requirements.	1	Increased green space.	C	Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.		1 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Space available includes Gibbs Green School car park / playground.	Technically possible depending on location of below ground services.	1	Moderate cost to construct and maintenance would be that of existing 1 site.	C	construction. Health & Safety issues associated with volumes of water and contaminants.	-1	No alteration to environmental benefit.		Limited benefit provided to hotspot areas.		0 0	No
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	C	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.		1 -1	No
	Increasing Capacity in Drainage Systems		increase pipe sizes to provide adultional capacity within the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	C	No impact.		May only be effective for smaller, less intensive rainfall events.	-	1 -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-	High cost of intrusive 2 works	-2	Disruption during construction,	o	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.		1 -2	No
ļ	Improved Maintenance Regimes		Throughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance regimes.		Limited disruption.		No impact.		Most effective for low magnitude events.		1 4	Yes
PATHWA	Managing Overland Flows (Online Storage)		Adjust road structures to retain surface water within the road for a temporary period.	May encounter problems with services and access requirements.		with minimal additional maintenance prequirements.		Potential disruption during construction.		Potential disruption during construction.		Potential to retain volumes away from properties.		1 1	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Mund Road, Sun Road, Star Road etc. through lowering the road, raising pavements, in installation of speed humps to retain water. Encouraging greening of impermeable areas where	May encounter problems with services and access requirements.	(Moderate cost with minimal additional maintenance prequirements.	C	construction. Health & Safety issues associated with volumes of water and contaminants.	C	No impact.	0	Effective to convey surface water in controlled manner.		2 2	Yes
	Land Management Practices		possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into	Incorporate into planning	2	Slight modification to existing maintenance regimes.	1	Limited disruption.	O	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.		1 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	-	D N/A		N/A	ſ	N/A	0	N/A		0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.		Develop existing communication	1	Communication issues but will provide valuable warning time.	o	No impact.	0	Will help to minimise damage and risk to life provided it is accompanied with suitable information.		0 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		developer for additional measures. Complex to install in highly developed 2 areas.		Reduces need for later retrofitting of features.		Potential sustainability credits for implementation of features.		Management of surface water at site level.		1 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and operation.	C	No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.		0 2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide 1 information.	2	May be issues with language barriers and less mobile residents attendance to information events.	C	No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.		0 3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience	Relatively simple to retrofit features to		Cost will vary depending on the system being Implemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.		0 2	Yes



War	d ID	11 Palace Riversio	de												•
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Suitability of infiltration SuDS is uncertain. Should be	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and installation.	-1	Aesthetic value with education potential	(Provision of habitat, water air quality treatment & noise reduction. Potential to discharge to	2	Depending on design, significant quantities of water could be retained locally. Potential to discharge large	•	. 1	Yes
	Soakaways		confirmed on a site-by-site basis where geological	Potentially limited by	,	Moderate initial and		Below ground, so does		groundwater with		volumes of water dependent on			V
	Swales		investigations have been completed.	geology of area.		Moderate cost with low maintenance		Intrusion on open		Disputing can be used to		Would attenuate discharge to surface water network and may	-	1	Yes
			Limited open space adjacent to flow paths and roads.	Limited by space.	(requirements.	С	green area. Health and safety concerns.	(Planting can be used to enhance biodiversity value.	1	benefit downstream areas.	:	2	Yes
	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	,	Low cost with moderate maintenance 1 requirements.	1	Aesthetic appearance.		Water quality treatment	1	Allow for infiltration of rainfall during less intense, more frequent events.	(1 3	Yes
SOURCE	Rainwater Harvesting		between the control of the control o	Can be easily designed into new build. More difficult to retrofit.	(Reduced water supply and drainage costs with		Potential health & safety issues in public buildings.		Reduced water demand for		Potential to retain moderate	·	1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	Above ground implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance 1 requirements.		Increased green space.		Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.		. 5	Yes
	Detention Basins		Potential to develop open spaces such as recreation ground, school playing fields, sports fields, Hurlingham Park, to have a multifunctional use through lowering of ground levels to form a basin.	Technically possible depending on location of below ground services.	1	Low cost to construct and maintenance would be that of I existing site.	1	Disruption during construction and use. Health & Safety issues associated with volumes of water and contaminants.	C	Increase biodiversity with) water quality benefits.	2	Potential to store large volumes of surface water and discharge as appropriate.	-	2 6	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined. micrease pipe sizes to provice additional capacity within	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	C	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	<u>.</u>	-1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	C	No impact.	C	May only be effective for smaller, less intensive rainfall bevents.	-:	L -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-2	High cost of intrusive 2 works	-2	Disruption during construction,	C	Reduced pressure of combined network btrough reduced inflow.	1	Would act to provide additional capacity and attenuate flows.	-	L -2	No
'AY	Improved Maintenance Regimes		Inrougnout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.	2	Slight modification to existing maintenance regimes.	1	Limited disruption.	C) No impact.		Most effective for low magnitude events.	:	L 4	Yes
PATHW	Managing Overland Flows (Online Storage)		Creation of bunds to retain flood water by intercepting main flow routes near sports ground and Bishops Park recreation ground.	Construction of bunds with appropriate drainage.		moderate initial cost with minimal maintenance 1 requirements.		Potential disruption during construction.		Potential disruption during		Potential to retain large volumes of surface water upstream of catchment.		2	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Stevenage Road through lowering the road, raising pavements.	May encounter problems with services and access requirements.		Moderate cost with minimal additional maintenance		construction. Health & Safety issues associated with volumes of water and contaminants.		No impact.		Effective to convey surface			No
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into planning	-	Slight modification to existing maintenance 2 regimes.		Limited disruption.	C	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.			Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	(N/A	C	N/A	(N/A	C	N/A	(0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication 1 systems.	1	Communication issues but will provide valuable warning time.	C) No impact.		Will help to minimise damage and risk to life provided it is accompanied with suitable information.	() 2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		developer for additional measures. Complex to install in highly developed 2 areas.	-1	Reduces need for later retrofitting of features.	(Potential sustainability credits for implementation of features.	1	Management of surface water at site level.	:	3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and operation.	C) No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide L information.	2	May be issues with language barriers and less mobile residents attendance to information events.	(No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	() 3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to properties and incorporate into building design.		Cost will vary depending on the system being a implemented.	c	Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.	() No impact.		Will reduce damage to properties and help worth faster recovery.	()2	Yes

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	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic Potential costs with	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy. Suitability of infiltration SuDS is uncertain. Should be	No suitable buildings in the Ward.	-1	Potential costs with modification of structures and installation.	-1	Aesthetic value with leducation potential	0	Provision of habitat, water air quality treatment & noise reduction. Potential to discharge to	2	Depending on design, significant quantities of water could be retained locally. Potential to discharge large	1	1	Yes
	Soakaways		confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	(Moderate initial and maintenance cost.	(Below ground, so does not affect land use	0	groundwater with treatment measures.	C	volumes of water dependent on geology.	1	1	Yes
	Swales		Limited open space available for this.	Limited open space.	-3	Moderate cost with low maintenance requirements.		Intrusion on playing) field area.	0	Planting can be used to enhance biodiversity value.		Would attenuate discharge to surface water network: may benefit downstream areas.	0	-1	No
	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced. Limited Council land available for installation.	Limited Council land available for installation.		Low cost with moderate maintenance trequirements.	1	Aesthetic appearance.		Water quality treatment through filtration process.		Allow for infiltration of rainfall during less intense, more frequent events.	0	1	Yes
SOURCE	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	(Reduced water supply and drainage costs with operational 0 system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.	1	3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance I requirements.	1	I Increased green space.	0	Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.	1	5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Utilise space of Fulham College Boys School and/or space off Dawes Road.		1	Low cost to construct and maintenance would be that of existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit.	C	Potential to store large volumes of surface water and discharge as appropriate.	2	4	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	1	-1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding botspots.	0	No impact.	C	May only be effective for smaller, less intensive rainfall events.	-1	-5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	-2	High cost of intrusive	-2	Disruption during 2 construction,		Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.	1	-2	No
/AY	Improved Maintenance Regimes		Inrougnout ward concentrating on flooding notspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.	2	Slight modification to existing maintenance 2 regimes.	1	Limited disruption.	0	No impact.	C	Most effective at low magnitude events.	1	4	Yes
	Managing Overland Flows (Online Storage)		Limited open space alongside flow routes.	Limited open space.	-2	with minimal maintenance property.	1	Potential disruption	o	Potential disruption during construction	C	Potential to retain large volumes of surface water upstream of catchment.	0	-1	No
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Orbain Road, St Olaf's Road and Sherbrooke Road through lowering the road, raising pavements, in installation of speed humps.	May encounter problems with services and access requirements.	(Moderate cost with minimal additional maintenance prequirements.	-1	construction. Health & Safety issues associated with volumes of water and L contaminants.	0	No impact.	C	Effective to convey surface water in controlled manner.	2	1	Yes
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime.	2	Slight modification to existing maintenance 2 regimes.	1	Limited disruption.	0	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.	1	5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	(N/A	() N/A	O	N/A	C	N/A	0	0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication Laystens Protential Cost to the	1	Communication issues but will provide I valuable warning time.	0	No impact.	C	Will help to minimise damage and risk to life provided it is accompanied with suitable information.	0	2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.	2	developer for additional measures. Complex to install in highly developed	-1	Reduces need for later L retrofitting of features.		Potential sustainability credits for implementation of features.	_1	Management of surface water at site level.	1	3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	(Low cost and can prevent significant damage to properties.		property blight and responsibility for maintenance and 2 operation.	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	0	2	Yes
	Social Change, Education and Awareness		enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide information.	2	May be issues with language barriers and less mobile residents attendance to information events.	0	No impact.	C	No effect on flood volumes, however will help minimise damage and risk to life.	0	3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments and could be retrofitted to vulnerable properties.	Relatively simple to retrofit features to properties and incorporate into building design.	_	Cost will vary depending on the system being pimplemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean-up time.		No impact.	_	Will reduce damage to properties and help worth faster recovery.			Vac

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Measure	Assessment	Location / Specific Details	Technical	Score	Economic Potential costs with	Score	Social	Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	forwar
		Potential to retrofit to council owned properties			Potential costs with modification of				Provision of habitat, water		Depending on design, significant			
Green Roof			Potential issues with		structures and		Aesthetic value with		air quality treatment &		quantities of water could be			
		where possible through planning policy.	structures of buildings.	-1	installation.	-:	1 education potential	(noise reduction.	2	retained locally.	1	1	Yes
		Suitability of infiltration SuDS is uncertain. Should be	Data and all a Parity of her		Adadamska inikial and		Dalam and an dana		Potential to discharge to		Potential to discharge large			
Soakaways			Potentially limited by		Moderate initial and maintenance cost.		Below ground, so does not affect land use		groundwater with treatment measures.	,	volumes of water dependent on geology.	1	1	Yes
		investigations have been completed.	geology of area.		inalitenance cost.	'	not affect failu use		treatment measures.		geology.	1		res
Surales					Moderate cost with						Would attenuate discharge to			
Swales					low maintenance		Intrusion on playing		Planting can be used to		surface water network: may			
		Limited space within Ward to develop these.	Limited space .	-2	requirements.		o field area.	(enhance biodiversity value.	1	benefit downstream areas.	0	-1	No
		Generic measure: throughout smaller roads and paved			Low cost with									
Permeable Paving		open spaces within the Ward. Incorporate across the	Limited Council land		moderate						Allow for infiltration of rainfall			
			available for		maintenance			_	Water quality treatment		during less intense, more		_	
		Council land available for installation.	installation.	-3	requirements. Reduced water supply	:	1 Aesthetic appearance.	(through filtration process.	1	frequent events.	0	1	Yes
		Potentially applicable to all new development and can be	Can be easily designed		and drainage costs		Potential health &							
Rainwater Harvesting		introduced retrospectively. Encourage use in new	into new build. More		with operational		safety issues in public		Reduced water demand for		Potential to retain moderate			
		developments where possible through planning policy.	difficult to retrofit.	(system.	:	1 buildings.	(buildings.	1	volumes from rainwater.	1	3	Yes
			implementation with		Low cost to set up									
Rain gardens and tree planters		Throughout Ward where existing tree pits could be	slight adjustment of the		with regular						Minor at individual level,			
		expanded.	surface drainage		maintenance				Increase biodiversity with		widespread implementation			
			network.	1	requirements.	:	Increased green space.	(water quality benefits.	2	needed to achieve benefits.	1	5	Yes
							construction. Health &							
Datastian Books					Low cost to construct		Safety issues							
Detention Basins					and maintenance		associated with		L		Potential to store large volumes			
		Marked and a state of the state	Harley day		would be that of		volumes of water and		No alteration to		of surface water and discharge			
		Limited space within Ward to develop these.	Limited space	-2	existing site.		1 contaminants.	(environmental benefit	C	as appropriate.	0	-1	NO
							Provide amenity and							
Ponds and Wetlands			Difficult with no regular		Moderate initial cost		education resource.							
		These features end to require a supply of water.	source of water to		and high cost to		Health & Safety				Potentially could retain large			
		Feasibility would need to be examined.	replenish systems.	-2	maintain		2 concerns.	(Provide habitat diversity.	2	volumes of surface water.	1	-1	No
		the sewer network. From analysis of the Thames Water												
Increasing Capacity in Drainage		sewer network, it can be seen that in extreme events	Complex as numerous		Extensive works with		Reduced flood waters				May only be effective for			
Systems		capacity is quickly reached therefore this is unlikely to	connections to		high cost. Minimal		across flooding				smaller, less intensive rainfall			
		have a notable effect.	combined network.	-2	maintenance.	-3	2 hotspots.	(No impact.	C	events.	-1	-5	No
		Areas could be connected to a separate surface water												
		network, which is discharged to detention basin, or other												
Separation of Foul and Surface		large SuDS feature, prior to reconnection to the Thames												
Water Sewers		network. Could be used to temporarily divert rainwater	Complex sewer						Reduced pressure of					
		from sites, where surface water cannot be retained at	network with multiple connections		High cost of intrusive works		Disruption during 2 construction,	,	combined network through reduced inflow.		Would act to provide additional		2	N. a
		site level. Throughout Ward concentrating on flooding notspots.	Adjust existing	-2	WOLKS		z construction,	,	reduced inflow.	,	capacity and attenuate flows.	1	-2	INO
		More regular inspection and maintenance of the current	maintained regime to		Slight modification to									
Improved Maintenance Regimes		sewer system to remove debris and increase	focus on key flooding		existing maintenance						Most effective for low			
		conveyance.	areas.	- 2	regimes. Moderate initial cost	:	1 Limited disruption.	(No impact.	C	magnitude events.	1	4	Yes
Managing Overland Flows (Online					with minimal						Potential to retain large volumes	,		
Storage)					maintenance		Potential disruption		Potential disruption during		of surface water upstream of			
		Limited space alongside flow paths for implementation.	Limited space	-2	requirements.	:	1 during construction	(construction	C	catchment.	0	-1	No
							construction. Health &							
Managing Overland Flows		Modify streets that already tend to channel surface	May encounter		Moderate cost with		Safety issues							
(Preferential Flow paths)			problems with services		minimal additional		associated with							
(Treferendarriow patris)			and access		maintenance		volumes of water and				Effective to convey surface			
		speed humps.	requirements.	(requirements.	-:	1 contaminants.	(No impact.	C	water in controlled manner.	2	1	Yes
		Encouraging greening of impermeable areas where												
Land Management Practices		possible: driveways, ground adjacent to walkways, school			Slight modification to						Reduced surface water runoff			
management reactices			Incorporate into site		existing maintenance				Increased infiltration,		from site during high intensity			
		policy. Encourage aeration of parks and sports fields.	maintenance regime.	2	regimes.		1 Limited disruption.	(reduced need for irrigation.	1	events.	1	5	Yes
Deculverting Watercourse(s)					I		l		L.,		L.,.			
		No watercourses in borough to deculvert	N/A	(N/A	<u> </u>	D N/A	- (N/A	L .	N/A	0	0	No
		Develop upon existing warning systems to alert									Will help to minimise damage			
Improved Weather Warning		properties at risk from heavy rainfall. Make use of Met			Develop existing		Communication issues				and risk to life provided it is			
-		Office forecast services. This measure is likely to be more			communication		but will provide		L		accompanied with suitable			
		affective if coupled with community education.	procedures.	1	systems.		1 valuable warning time.	(No impact.	L	information.	0	2	Yes
			Policy requirement for		developer for									
Planning Policies to Influence		Throughout Ward; Set policy requirements for	attenuation in the		additional measures.									
Development		attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Ward and resilience		Complex to install in				Potential sustainability		L			
		resilience measures for properties in moouning notspots.	measures for	-	highly developed		Reduces need for later		credits for implementation		Management of surface water at	t .	_	Va
			properties in hotspots.	2	areas.	-	retrofitting of features.	(of features.	1	site level.	1	3	Yes
			Potential issues with				property blight and							
Temporary or Demountable Flood			presence required to		Low cost and can		responsibility for				No effect on flood volumes,			
Defences			set up defences at short		prevent significant		maintenance and		No tours		however will help minimise			V-
		made resistant or resilient to flooding.	notice.	(damage to properties.		2 operation.	- (No impact.	L .	damage and risk to life.	0	2	Yes
			Utilise existing											
Carial Change Educati		enhance knowledge and understanding of flood risk. Will	communication				May be issues with							
Social Change, Education and		be dependent on community engagement opportunities.					language barriers and				No office to a fine			
Awareness		In areas with a large migration of population it may be	events as well as		Low cost to update		less mobile residents				No effect on flood volumes,			
		difficult to undertake / pass on information from one property owner to another.	providing updates on the council website.	1	website and provide information.		attendance to 2 information events.	,	No impact.	,	however will help minimise		2	Vec
		Individual property flood resistance / resilience measures			innormation.	,	amormation events.	'	по ппраст.	l (damage and risk to life.	0	3	Yes
		could be installed such as demountable flood barriers, air	retrofit features to		Cost will vary		Minimal disruption,							
Improved Resilience and		brick covers, tiled flooring . Applicable to all new	properties and		depending on the		but may blight houses				Will reduce damage to			
Resistance Measures		developments	incorporate into		system being		if features are obvious.				properties and help worth faster	·		
		and could be retrofitted to vulnerable properties.	building design.	2	implemented.		Reduce clean-up time.	(No impact.	C	recovery.	0	2	Yes

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	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and installation.	-1	Aesthetic value with education potential	0	Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water 2 could be retained locally.	1	. 1	Yes
	Soakaways		Suitability of infiltration SubS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	C	Moderate initial and maintenance cost.	C	Below ground, so does not affect land use	0	Potential to discharge to groundwater with treatment measures.	(Potential to discharge large volumes of water dependent on geology.	1	. 1	Yes
	Swales		Limited space within Ward to develop these.	Limited space .	-2	Moderate cost with low maintenance requirements.	C	Intrusion on playing field area.	0	Planting can be used to enhance biodiversity value.	1	Would attenuate discharge to surface water network: may benefit downstream areas.	C	-1	No
ш	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance requirements.	1	Aesthetic appearance.	0	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	C	3	Yes
SOURC	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	C	supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate Lyolumes from rainwater.	1	3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	above ground implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance requirements.		Increased green space.		Increase biodiversity with water quality benefits.		Minor at individual level, widespread implementation 2 needed to achieve benefits.	1	. 5	Yes
	Detention Basins		Limited open space in areas where surface water tends to pond. Water would need to be diverted.	Technically possible depending on location of below ground services.	-2	Low cost to construct and maintenance would be that of existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	No alteration to environmental benefit.	(Potential to store large volumes of surface water and discharge as appropriate.	C	-1	No
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large 2 volumes of surface water.	1	-1	No
	Increasing Capacity in Drainage Systems		increase pipe sizes to provide adoltional capacity within the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	(May only be effective for smaller, less intensive rainfall events.	-1	-5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	,	High cost of intrusive	,	Disruption during	0	Reduced pressure of combined network through reduced inflow.		Would act to provide additional		1	No
At	Improved Maintenance Regimes		Troughout Ward concentrating on Hooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance regimes.		Limited disruption.		No impact.		Most effective for low magnitude events.		-2	Yes
PATHW/	Managing Overland Flows (Online Storage)		Creation of bunds to retain flood water by intercepting main flow routes from the park and playing fields.	Construction of bunds		Moderate initial cost with minimal maintenance requirements.	1	Potential disruption		Potential disruption during construction		Potential to retain large volumes of surface water upstream of catchment.		4	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Crookham Road, Mimosa Street, Lettice Street and Whittingstall Road through lowering the road, raising pavements, in installation of speed humps.		·	Moderate cost with minimal additional maintenance requirements.	.1	construction. Health & Safety issues associated with volumes of water and contaminants.		No impact.		Effective to convey surface	-	1	Yes
	Land Management Practices		neurous ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.		2	Slight modification to existing maintenance regimes.	1	Limited disruption.		Increased infiltration, reduced need for irrigation.		Reduced surface water runoff from site during high intensity Levents.	1	. 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A	C	N/A	C	N/A	0	N/A	(N/A	C	0	No
	Improved Weather Warning			Utilise existing alert procedures.	1	Develop existing communication systems.	1	Communication issues but will provide valuable warning time.	0	No impact.	(Will help to minimise damage and risk to life provided it is accompanied with suitable information.	C	2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the	2	Potential cost to the developer for additional measures. Complex to install in highly developed areas.		Reduces need for later retrofitting of features.		Potential sustainability credits for implementation of features.		Management of surface water at site level.	1	. 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	C	Low cost and can prevent significant damage to properties.		property blight and responsibility for maintenance and operation.		No impact.		No effect on flood volumes, however will help minimise damage and risk to life.	C	2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide information.	2	May be issues with language barriers and less mobile residents attendance to information events.	0	No impact.		No effect on flood volumes, however will help minimise I damage and risk to life.	C	31	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood barriers, air brick covers, tiled flooring . Applicable to all new developments	Relatively simple to	2	Cost will vary depending on the system being implemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.		2	Yes



War	rd ID	15 Parsons Green	and Walham								1				
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Potential issues with structures of buildings.	٠	Potential costs with modification of structures and 1 installation.	ر.	Aesthetic value with		Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water could be retained locally.		1 1	Yes
	Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.		Moderate initial and maintenance cost.		Below ground, so does not affect land use		Potential to discharge to groundwater with treatment measures.	0	Potential to discharge large volumes of water dependent on geology.			Yes
	Swales		Develop within open space running adjacent to roads such as along New Kings Road and Pearscroft Road.	System would need to be developed to connect to drainage network as infiltration is limited.	:	Moderate cost with low maintenance 1 requirements.	(Intrusion on playing D field area.	C	Planting can be used to enhance biodiversity value	. 1	Would attenuate discharge to surface water network: may benefit downstream areas.		1 3	Yes
ACE.	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.		Low cost with moderate maintenance 1 requirements.		1 Aesthetic appearance.	C	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.		0 3	Yes
200	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.		Reduced water supply and drainage costs with 0 operational system.		Potential health & safety issues in public 1 buildings.	C	Reduced water demand fo	r 1	Potential to retain moderate volumes from rainwater.		1 3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	:	Low cost to set up with regular maintenance		1 Increased green space.		Increase biodiversity with	2	Minor at individual level, widespread implementation needed to achieve benefits.		1 5	Yes
	Detention Basins		Potential to develop open spaces to have a multifunctional use through lowering of ground levels to form a basin. Opportunities in Eel Brook Common or William Parnell Park.	Technically possible depending on location of below ground services.		Low cost to construct and maintenance would be that of 1 existing site.		construction. Health & Safety issues associated with volumes of water and 1 contaminants.	C	No alteration to environmental benefit.	0	Potential to store large volumes of surface water and discharge as appropriate.		2 4	Yes
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined. micrease pipe sizes to provioue adminish capacity within	Difficult with no regular source of water to replenish systems.		Moderate initial cost and high cost to 2 maintain	-3	Provide amenity and education resource. Health & Safety 2 concerns.	С	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.		1 -1	No
	Increasing Capacity in Drainage Systems		the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.		Extensive works with high cost. Minimal 2 maintenance.		Reduced flood waters across flooding 2 hotspots.	C	No impact.	0	May only be effective for smaller, less intensive rainfall events.		1 -5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections	÷	High cost of intrusive 2 works	-:	Disruption during 2 construction,	o	Reduced pressure of combined network otherwise through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.		1 -2	No
}	Improved Maintenance Regimes		Inroughout Ward concentrating on flooding horspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance 2 regimes.		1 Limited disruption.		No impact.		Most effective for low magnitude events.		1 4	Yes
PAIHW	Managing Overland Flows (Online Storage)		Creation or bunds to retain 1100d water by intercepting main flow routes from the park: northern edge of Eel Brook Common and/or Southern side of William Parnell Park.	Construction of bunds with appropriate drainage.	:	Moderate initial cost with minimal maintenance 2 requirements.		Potential disruption 1 during construction	C	Potential disruption during		Potential to retain large volumes of surface water upstream of catchment.		2 5	Yes
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Linver Road and Alderville Road through lowering the road, raising pavements, in installation of speed humps.	May encounter problems with services and access requirements.	1	Moderate cost with minimal additional maintenance or requirements.	÷	construction. Health & Safety issues associated with volumes of water and 1 contaminants.	C	No impact.	0	Effective to convey surface water in controlled manner.	:	2 1	Yes
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime.		Slight modification to existing maintenance 2 regimes.		1 Limited disruption.	C	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.		1 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		0 N/A		D N/A		N/A		N/A		0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be	Utilise existing alert	·	Develop existing communication		Communication issues but will provide valuable warning				Will help to minimise damage and risk to life provided it is accompanied with suitable			We control of the con
	Planning Policies to Influence Development		more affective if coupled with community education. Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	procedures. Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.		1 systems. Potential cost to the developer for additional measures. Complex to install in highly developed 2 areas.	-	I time. Reduces need for later retrofitting of I features.		Potential sustainability credits for implementation of features.	1	Information. Management of surface water at site level.			Yes Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.		Low cost and can prevent significant damage to 0 properties.		property blight and responsibility for maintenance and poperation.		No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.		0 2	Yes
	Social Change, Education and Awareness			Utilise existing communication strategies and public events as well as providing updates on the council website.		Low cost to update website and provide 1 information.		May be issues with language barriers and less mobile residents attendance to 2 information events.		No impact.		No effect on flood volumes, however will help minimise damage and risk to life.		0 2	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood	Relatively simple to retrofit features to properties and incorporate into building design.	<u> </u>	Cost will vary depending on the system being 2 implemented.		Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.			Yes



War	ID	16 Sands End													
	Measure	Initial Assessment	Location / Specific Details	Technical	Technical Score	Economic	Economic Score	Social	Social Score	Environmental	Env Score	Objectives	Objectives Score	Overall Score	Carry forward?
	Green Roof		Potential to retrofit to council owned properties including schools. Encourage use in new developments where possible through planning policy.	Potential issues with structures of buildings.	-1	Potential costs with modification of structures and Linstallation.	-1	Aesthetic value with education potential	0	Provision of habitat, water air quality treatment & noise reduction.	2	Depending on design, significant quantities of water could be retained locally.	1	. 1	Yes
	Soakaways		Suitability of infiltration SuDS is uncertain. Should be confirmed on a site-by-site basis where geological investigations have been completed.	Potentially limited by geology of area.	C	Moderate initial and maintenance cost.	0	Below ground, so does not affect land use	0	Potential to discharge to groundwater with treatment measures.	0	Potential to discharge large volumes of water dependent on geology.	1	. 1	Yes
	Swales		Develop within open space running adjacent Peterborough Road within South Park, or William Parnell Park.	System would need to be developed to connect to drainage network as infiltration is limited.	1	Moderate cost with low maintenance requirements.	1	Intrusion on playing field area.	0	Planting can be used to enhance biodiversity value.	1	Would attenuate discharge to surface water network: may benefit downstream areas.	1	. 4	Yes
RCE	Permeable Paving		Generic measure: throughout smaller roads and paved open spaces within the Ward. Incorporate across the borough when roads are due to be re surfaced.	Traffic loads may limit this to smaller roads and car parking areas. Method of discharge dependent on geology.	1	Low cost with moderate maintenance L requirements.	1	Aesthetic appearance.	0	Water quality treatment through filtration process.	1	Allow for infiltration of rainfall during less intense, more frequent events.	Q) 3	Yes
SOURCE	Rainwater Harvesting		Potentially applicable to all new development and can be introduced retrospectively. Encourage use in new developments where possible through planning policy.	Can be easily designed into new build. More difficult to retrofit.	Ó	supply and drainage costs with operational system.	1	Potential health & safety issues in public buildings.	0	Reduced water demand for buildings.	1	Potential to retain moderate volumes from rainwater.	1	3	Yes
	Rain gardens and tree planters		Throughout Ward where existing tree pits could be expanded.	implementation with slight adjustment of the surface drainage network.	1	Low cost to set up with regular maintenance		Increased green space.		Increase biodiversity with water quality benefits.	2	Minor at individual level, widespread implementation needed to achieve benefits.	1	5	Yes
	Detention Basins		Limited open space in areas where surface water accumulates. Surface water would need to be directed to available areas.	Technically possible depending on location of below ground services.	-1	Low cost to construct and maintenance would be that of existing site.	1	construction. Health & Safety issues associated with volumes of water and contaminants.		No alteration to environmental benefit.	0	Limited opportunity to retain volumes in key areas.	-1	-1	No
	Ponds and Wetlands		These features end to require a supply of water. Feasibility would need to be examined.	Difficult with no regular source of water to replenish systems.	-2	Moderate initial cost and high cost to 2 maintain	-2	Provide amenity and education resource. Health & Safety concerns.	0	Provide habitat diversity.	2	Potentially could retain large volumes of surface water.	1	1	No
	Increasing Capacity in Drainage Systems		increase pipe sizes to provide adoutional capacity within the sewer network. From analysis of the Thames Water sewer network, it can be seen that in extreme events capacity is quickly reached therefore this is unlikely to have a notable effect.	Complex as numerous connections to combined network.	-2	Extensive works with high cost. Minimal maintenance.	-2	Reduced flood waters across flooding hotspots.	0	No impact.	O	May only be effective for smaller, less intensive rainfall events.	-1	5	No
	Separation of Foul and Surface Water Sewers		Areas could be connected to a separate surface water network, which is discharged to detention basin, or other large SuDS feature, prior to reconnection to the Thames network. Could be used to temporarily divert rainwater from sites, where surface water cannot be retained at site level.	Complex sewer network with multiple connections		High cost of intrusive	.2	Disruption during construction,	0	Reduced pressure of combined network through reduced inflow.	1	Would act to provide additional capacity and attenuate flows.	1	-2	No
VAY	Improved Maintenance Regimes		Throughout Ward concentrating on flooding hotspots. More regular inspection and maintenance of the current sewer system to remove debris and increase conveyance.	Adjust existing maintained regime to focus on key flooding areas.		Slight modification to existing maintenance regimes.		Limited disruption.		No impact.	0	Most effective for low magnitude events.	1	4	Yes
PATHV	Managing Overland Flows (Online Storage)		Limited open space alongside flow paths. Surface water would need to be directed to available areas.	Limited space	-1	Moderate initial cost with minimal maintenance L requirements.	1	Potential disruption during construction	0	Potential disruption during construction	o	Limited opportunity to retain volumes in key areas.	-1	-1	No
	Managing Overland Flows (Preferential Flow paths)		Modify streets that already tend to channel surface water, such as Ashcombe Street, Hugon Road and De Morgan Road through lowering the road, raising pavements, in installation of speed humps.	May encounter problems with services and access requirements.	C	Moderate cost with minimal additional maintenance requirements.	-1	construction. Health & Safety issues associated with volumes of water and contaminants.	0	No impact.	0	Effective to convey surface water in controlled manner.	2	1	Yes
	Land Management Practices		Encouraging greening of impermeable areas where possible: driveways, ground adjacent to walkways, school grounds etc. implement requirement into planning policy. Encourage aeration of parks and sports fields.	Incorporate into site maintenance regime.	2	Slight modification to existing maintenance pregimes.	1	Limited disruption.	0	Increased infiltration, reduced need for irrigation.	1	Reduced surface water runoff from site during high intensity events.	1	. 5	Yes
	Deculverting Watercourse(s)		No watercourses in borough to deculvert	N/A		N/A	0	N/A	0	N/A	0	N/A		0 0	No
	Improved Weather Warning		Develop upon existing warning systems to alert properties at risk from heavy rainfall. Make use of Met Office forecast services. This measure is likely to be more affective if coupled with community education.	Utilise existing alert procedures.	1	Develop existing communication		Communication issues but will provide valuable warning time.		No impact.		Will help to minimise damage and risk to life provided it is accompanied with suitable information.	0	2	Yes
	Planning Policies to Influence Development		Throughout Ward; Set policy requirements for attenuation from properties throughout the Ward, and resilience measures for properties in flooding hotspots.	Policy requirement for attenuation in the Ward and resilience measures for properties in hotspots.	2	developer for additional measures. Complex to install in highly developed areas.	-1	Reduces need for later retrofitting of features.	0	Potential sustainability credits for implementation of features.	1	Management of surface water at site level.	1	. 3	Yes
RECEPTOR	Temporary or Demountable Flood Defences		Use these in areas where buildings can not be easily made resistant or resilient to flooding.	Potential issues with presence required to set up defences at short notice.	C	Low cost and can prevent significant damage to properties.	2	property blight and responsibility for maintenance and operation.	0	No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.	0) 2	Yes
	Social Change, Education and Awareness		Update website, leaflet drops, classes at local schools to enhance knowledge and understanding of flood risk. Will be dependent on community engagement opportunities. In areas with a large migration of population it may be difficult to undertake / pass on information from one property owner to another.	Utilise existing communication strategies and public events as well as providing updates on the council website.	1	Low cost to update website and provide Linformation.	2	May be issues with language barriers and less mobile residents attendance to information events.	0	No impact.	0	No effect on flood volumes, however will help minimise damage and risk to life.	O) 3	Yes
	Improved Resilience and Resistance Measures		Individual property flood resistance / resilience measures could be installed such as demountable flood	Relatively simple to retrofit features to properties and incorporate into building design.	_2	Cost will vary depending on the system being I implemented.	0	Minimal disruption, but may blight houses if features are obvious. Reduce clean- up time.		No impact.		Will reduce damage to properties and help worth faster recovery.	0		Yes



APPENDIX C – SPATIAL PLANNER INFORMATION PACK

A Spatial Planning Information Pack has been produced as part of the SWMP and is provided electronically alongside this report.

Appendix C: LBHF_SWMP_AppendixC_Spatial_Planner_Info_Pack_v04.pdf



Appendix C – Spatial Planning Information Pack



1.1 Background

The National Planning Policy Framework (NPPF)¹ and the accompanying Planning Practice Guidance² set out national planning guidance for development in relation to flood risk. It takes a risk based approach and categorises land uses into different vulnerabilities, which are appropriate to different flood zones.

The NPPF applies to all forms of flood risk; however, surface water, groundwater and ordinary watercourse flood risks are generally less well understood than fluvial or coastal flood risk. In part this is due to the much faster response times of surface water flooding, a perception that the impacts are relatively minor and the highly variable nature of influences, e.g. storm patterns, local drainage blockages and interactions with the sewer system.

However, climate change models are predicting more frequent heavy storms and there is emerging evidence that this is already happening. It is also clear from the flooding that occurred in several parts of England in summer 2007 that surface water flooding can have major impacts. In the heavily urbanised area of London, the risks are significant and it is important that appropriate consideration is given to these risks when new development is proposed.

The planning system is a key tool in reducing flood risk, and by using information included within this SWMP the potential to use planning to reduce flood risk can apply to the surface water risk as well as fluvial and tidal risk.

Whilst this document is titled a Surface Water Management Plan (SWMP), it also includes consideration of groundwater flood risk through the identification of a map showing "Increased Potential for Elevated Groundwater" (IPEG).

1.2 Using the SWMP to update the borough SFRA

Most borough SFRAs contain little or no historic analysis of surface water, groundwater and ordinary watercourse flood risk. The mapping within this SWMP (Figures 3.4-1 and 3.4-2) show some areas that are vulnerable to extensive deep accumulations of water (>0.5m) during the 1% AEP event. These areas have a high certainty of flooding during extreme storms and the damage occurring is likely to be significant. The mapping also shows some small areas of potentially deep flooding (>0.5m), these areas may have particular risks associated with them, but may also occur due to irregularities in mapping and modelling. The mapping also shows areas of shallower flooding (<0.5m), some isolated and some more extensive flooding. Maps show general flow directions and approximate velocities (in the form of 'hazard' maps) as even relatively shallow water flowing at high velocities can be a threat to life and can cause damage.

The production of this SWMP provides new updated data and the SFRA³ has therefore been updated to account for this.

¹ Communities and Local Government. (March 2012) National Planning Policy Framework.

² Communities and Local Government. (March 2014) Planning Practice Guidance.

³ London Borough of Hammersmith & Fulham (2015) Strategic Flood Risk Assessment



1.3 Using the SWMP to update policies in Development Plan Documents

Ideally the review of the borough SFRA should be a pre-cursor to any significant change to the Core Strategy and development control policies. Therefore reference to the SFRA should automatically update the approach to local flood risks.

1.4 Using the SWMP to influence major areas of redevelopment

Where major development areas are proposed, either in the London Plan or within the Core Strategy DPD, these should be examined for:

- Flooding hotspots within the area;
- Areas identified as having an increased Potential for Elevated Groundwater;
- Contribution of run-off to flooding hotspots beyond the actual redevelopment area.

Given the large scale of major developments, it is unlikely that the local flood risk would prevent redevelopment taking place, but it may affect the location, uses, design and resilience of the proposals. Therefore, a site specific Flood Risk Assessment needs to be undertaken and should consider:

- the location of different types of land use within the site(s);
- the layout and design of buildings and open spaces to take account of flood risk, for example by identifying particular flow routes or flood storage areas;
- measures to reduce the impact of any flood, through flood resistance/resilience measures/materials;
- incorporating sustainable drainage and rainwater storage to reduce run-off to adjacent areas;
- linkages or joint approaches for groups of sites, possibly including those in surrounding areas.

1.5 Using the SWMP to influence specific development proposals

Whilst some small scale developments may not be appropriate in high risk areas, in most cases it will be a matter of ensuring that the Flood Risk Assessment considers those items listed under major developments above and also considers some or all of the following site specific issues:

- Are the flow paths and areas of ponding correct, and will these be altered by the proposed development?
- Has the site been planned sequentially to keep major surface water flow paths clear?
- Has exceedance of the site's drainage capacity been adequately dealt with? Where will exceedance flows run off the site?
- Could there be benefits to existing properties at risk downstream of the site if additional storage could be provided on the site?
- In the event of surface water flooding to the site, have safe access to / egress from the site been adequately considered.



- Have the site levels been altered, or will they be altered during development?
 Consider how this will impact surface water flood risk on the site and to adjacent areas.
- Have inter-dependencies between utilities and the development been considered? (for example, the electricity supply for building lifts or water pumps).

Further guidance on requirements relating to assessment and mitigation of surface water flood risk will be developed and published by London Borough of Hammersmith and Fulham Council as part of the Local Plan Supplementary Planning Document.

1.6 Specific Locational Considerations

Within the London Borough of Hammersmith and Fulham, a number of opportunity areas have already been identified for major development. Table C-1 provides a summary of the areas of major redevelopment along with the relevant wards which they cover and the corresponding number of flooding hotspots. The details of flood risk for these areas can be found in Section 3.8 of the SWMP report.

Table C-1: Opportunity Areas

Redevelopment Area	Wards and number of flooding hotspots
White City opportunity area	Ward 1 College Park and Old Oak, 39 flooding
	hotspots
	Ward 2 Wormholt and White City, 26 flooding hotspots
	Ward 3 Shepherd's Bush Green, 19 flooding hotspots
Hammersmith Town Centre &	Ward 6 Hammersmith Broadway, 34 flooding hotspots
Riverside regeneration Area	
Fulham regeneration area	Ward 10 North End, 11 flooding hotspots
(including Earls Court & West	Ward 13 Fulham Broadway, 10 flooding hotspots
Kensington opportunity areas)	Ward 14 Town, 21 flooding hotspots
	Ward 15 Parsons Green and Walham, 8 flooding
	hotspots
Park Royal opportunity area	Ward 16 Sands End, 9 flooding hotspots
South Fulham Riverside	Ward 11 Palace Riverside, 11 flooding hotspots
	Ward 16 Sands End, 9 flooding hotspots

Mapping Checklist

The table below indicates the SWMP maps which are of potential use for spatial planning. It should be noted that as part of the SWMP deliverables, the GIS datasets used to produce the maps below have been provided to the London Borough of Hammersmith and Fulham and should be used in any future mapping of surface water flood risk.

Table C-2: SWMP maps of potential use to spatial planners

Issue	SWMP Maps
Surface water flood risk (depth and hazard)	3.4-1 – 3.4-2
	3.4-8 – 3.4-15
	A.6 – A.13
Increased potential for elevated groundwater	3.7-1
Infiltration SUDs suitability map	A-4



Issue	SWMP Maps
Recorded incidents of sewer flooding	3.5-2



APPENDIX D – FLOOD RESILIENCE FORUM AND EMERGENCY PLANNER INFORMATION PACK

A Resilience Forum and Emergency Planner Information Pack has been produced as part of the SWMP and is provided electronically alongside this report.

Appendix D: LBHF_SWMP_AppendixD_Emergency_Planning_v02.pdf



Appendix D – Resilience Forum and Emergency Planner Information Pack



1.1 Introduction

Presently, surface water flooding is less well understood than other sources of flooding, partly because surface water events tend to happen and disperse quickly meaning that there is a lack of accurate and consistent records and partly because they are not tied to readily identifiable features such as rivers or the sea. Therefore this Surface Water Management Plan (SWMP) offers an opportunity to communicate up to date information about locations at risk from surface water flooding to those with an interest. Responses in an emergency will be informed by known surface water flooding locations, especially near public buildings and major transport routes and important infrastructure.

The purpose of this information pack is to assist in communicating surface water flood risk to the London Local Resilience Forum and Emergency Planners within the London Resilience Partnership to enable them to ensure that incident management plans are updated based on the improved understanding of surface water flooding. SWMP mapping outputs and knowledge will be used to:

- Update Community Risk Registers (CRR); and
- Update Multi-Agency Flood Plans (MAFP).

This pack is presented as a Frequently Asked Questions (FAQ) document and contains information that addresses the following points:

- 1. How can SWMP outputs improve Community Risk Registers?
- 2. How can SWMP outputs improve Multi-Agency Flood Planning?
- 3. How do SWMP outputs compliment the Flood Forecasting Centre's Extreme Rainfall Alert (ERA)?
- 4. Examples of Good Practice

In updating MAFPs, the London Borough of Hammersmith and Fulham, as well as the neighbouring boroughs, has a responsibility to partner with other key stakeholders and risk management authorities, who share the responsibility for decisions and actions. Ideally, the informal relationships established within the context of the Drain London programme should be formalised to ensure clear lines of communication and continued mutual cooperation through the development of a Memorandum of Understanding. This should include appropriate aspects for Surface Water Flood Risk Management.

1.2 How can SWMP outputs improve Community Risk Registers (CRRs)?

CRRs are prepared by Category 1 responders and are required as part of the Civil Contingencies Act (CCA) 2004. The CCA requires that Category 1 responders undertake risk assessments and maintain these risks in a CCR. In this context risks are defined as events which could result in major consequences, and they include risks from flooding.

Outputs from the SWMP can be used to reduce the uncertainties associated with assessing the likelihood and impact of surface water flooding (see CRR HL18 for more information on current risk assessment). The SWMP presents an opportunity for the identification of



vulnerable sites and populations which may be at increased risk, and allows for risk-based prevention or mitigation actions to be taken.

1.3 How can SWMP outputs improve Multi-Agency Flood Plans (MAFPs)?

MAFPs are specific emergency plans which should be developed by Local Resilience Forums, to deliver a coordinated plan to respond to flood incidents. MAFPs recognise the need for specific flooding emergency plans, due to the complex nature of flooding and the consequences that arise. Guidance on producing a MAFP is available at http://www.ukresilience.gov.uk/media/ukresilience/assets/flooding ma planning guidance 0 208.pdf.

Outputs from SWMPs should inform the development of, or update, the MAFP.

The SWMP surface water mapping should be used as an initial indicator of a possible risk. A Flood Risk Assessment at a site shown as being at risk of surface water flooding should consider:

- Impacts on flood receptor sites;
- The degree of receptor vulnerability; and
- In the event of surface water flooding to the site, has safe access to / egress from the site been adequately considered?

Table D-1 indicates the SWMP maps which are of potential use to emergency planning, and which maps may be suitable for updating existing MAFP maps.

Table D-1: SWMP maps of potential use to emergency planners

Issue	SWMP maps	Consider updating existing MAFP maps?
Surface water flood risk	3.4.1 – 3.4.2	Yes – more detailed methodology to that used
(depth and hazard)	3.8.1 – 3.8.30	for the MAFP. Hazard maps also provide
	A-6 – A-13	indicative flow paths.
Increased potential for	3.7.1	Yes – more detailed methodology to that used
elevated groundwater		for the MAFP.

1.4 HOW DO SWMP OUTPUTS COMPLEMENT THE FLOOD FORECASTING CENTRE'S EXTREME RAINFALL ALERT (ERA)?

In 2008 the Met Office and the Environment Agency set up the Flood Forecasting Centre to provide services to emergency and professional partners. The Flood Forecasting Centre provides an Extreme Rainfall Alert (ERA) service to Category 1 and Category 2 responders. The ERA is issued at county level and is used to forecast and warn for extreme rainfall that could lead to surface water flooding, particularly in urban areas. It is designed to help local response organisations manage the impact of flooding via two products:

- 1. Guidance issued when there is a 10% or greater chance or extreme rainfall; and
- 2. Alert issued when there is a greater than 20% chance of extreme rainfall.



Appendix D – Resilience Forum and Emergency Planner Information Pack

The ERA cannot provide site-specific real-time surface water flood forecast, but does offer a county level alert of impending rainfall. The alert is based on the probability of rainfall occurring, rather than being a definitive forecast.

Surface water flooding has very short lead times and is hard to predict in real time because local topography and drainage infrastructure affect the direction of runoff and location of flooding. However, the assessment carried out as part of this SWMP study has taken an important step towards the likely flow pathways and locations of ponding of surface water. Used in parallel with the ERA, this can be used to improve emergency planning and responses for surface water flooding events.

1.5 EXAMPLES OF GOOD PRACTICE FOR EMERGENCY PLANNERS

- Ensure that a programme of engagement on flood risk awareness is initiated within the Borough. Meet with key corporate communications teams to agree an approach to social change, education and awareness raising inline with the needs of the Borough.
- **Build trust** Public and stakeholder trust in authorities through **long term**, transparent engagement.
 - Ensure there are key messages that encourage attitude and behaviour change with the public. This will help to address misconceptions that flooding results from a failure on someone's part.
 - Educate the public to help them better understand where responsibilities lie, changes they can make to their own lifestyles, and actions they can take to physically reduce personal flood risk.
 - Encourage communities towards creating their own community action/response plans to support wider ownership of risk and responsibilities
 - Consider holding face to face interviews with at -risk families and groups to better inform your Community Risk Register. This will help both you and them to better understand risk and plan to manage it.
- Establish a **common baseline for flood data** and information in line with EA requirements. Set up a Borough 'One-Stop Shop' to enable efficient information consolidation and data sharing. This will support efficient planning and updating of the MAFP.
- Develop a surface water flooding response plan with vulnerable receptors as
 external partners. Vulnerable receptors could include hospitals, schools and care
 homes. Identify these through Emergency Planning and other relevant forums and
 build into stakeholder engagement. This will assist with prioritisation decisions. For
 example 'early warning' processes, appropriate measures, funding and resourcing.
- Link the actions from the SWMP directly to the Flood Risk Management Strategy for the Borough such that a programme of work is visible.



Appendix D – Resilience Forum and Emergency Planner Information Pack

- Link with the Planning Department's Strategic Flood Risk Assessment (SRFA) to ensure that Emergency Planners are involved in land use decisions for new development.
- Create a key facts and 'what to do' section for surface water flooding in **emergency handbooks**. Provide easy-to-reach contact points, and regularly update your website.
- Work with other agencies, such as the Environment Agency flood alert/warning schemes, in the interests of cost effectiveness and good communication - but still own the responsibility for your borough. Use others' information to reinforce your own process.



APPENDIX E – ACTION PLAN

Appendix E: LBHF_SWMP_AppendixE_Action_Plan_v03.pdf

Draft SWMP Action Plan - London Borough of Hammersmith Fulham



,		Action		Briority Banking	Investigation /	Cost	Benefit	Potential Funding Sou	ıraa	Timing	Action Type	F	Responsibility	Drimary	Other Stakeholders	EU Related?	Re	eview
	What?	How?	Where?	Priority Ranking	Investigation / Feasibility	Capital Other	Benefit	Potential Funding Sol	Timeframe	Date Approx. Dura	tion Action Type	Lead Organisation	LLFA Dept.	Primary Support	Other Stakeholders	EU Related?	Frequency	Next
F1	Implement and populate	Implement a standardised asset register structure as per	Borough Wide	High	1 casibility	<£25k	Improved procedures and protocol for recording	LBHF / Defra	Short	6 months	Flood and Water	LBHF	Transport / Highways	GIS Team &	EA, TfL, Network Rail,	Yes		
	a standardised Asset Register for the LBHF,	the suggested template provided by Defra. Educate departments involved in filling in the register, need to					surface water assets in the Borough and improved understanding and record of surface water assets in				Management Act / Flood Risk		(Flood Risk Manager)	Transport / Highways	TWUL, London Underground, Energy			
	prioritising surface water	ensure everyone involved understands the register, its					the Borough.				Regulations			Team	Operators + others as			
		t purpose and the methodology. Populate Asset Register with Council-owned Surface													appropriate			
	flood	Water / Drainage Assets																
F2		Revise the Asset Register as required to incorporate	Borough Wide	Low		<£25k	Improved information and access / visualisation of	LBHF / Defra	Medium	Ongoing	Flood and Water	LBHF				Yes		
	Register	more information, i.e. survey details and develop a GIS/web based- compatible database to create a spatial					surface water assets in the Borough.				Management Act / Flood Risk		(Flood Risk Manager)	Transport / Highways				
F0.		representation of the surface water assets.	5					LOUE / D. /	01		Regulations	L DUE		Team				
	Implement a standardised Flood	Implement a standardised flood incident log to record flood events. Educate departments involved in filling in	Borough Wide	High		<£25k	Improved procedures and protocol for recording flood events and flood risk in the Borough. Will	LBHF / Defra	Short	6 months to Implement the lo	Flood and Water Management Act /	LBHF				Yes		
	Incident Log to record	the spreadsheet to ensure everyone involved					provide improved historically flood information to			this could be don	Flood Risk		(1 lood 1 tlok Managor)	riaming roam				
	and investigate future flooding incidents within	understands the log and the methodology. It is recommended that the source of flooding be recorded,					support ongoing and future flood mitigation schemes.			immediately. The training of staff m								
the LBHF		e.g. gully surcharging, to inform maintenance priorities.					Scriences.			take more time to								
										formulate and ac but it should be	ion							
										completed within	6							
-,	Establish a Flood Risk	Cature of DUC Flood Management Crous with leave	Daraugh Wide	Lifety		-0254	Will ansaurage a partnership approach to FDM and	LDUE / Defre	Chart	months.	Flood and Water	LBHF	Transport / Highways	All Tooms in	EA TWALL TH	Vee		
	Management Group for	Set up a LBHF Flood Management Group with key departments and stakeholders in the Borough included.	Borough Wide	High		<£25k	Will encourage a partnership approach to FRM and help to improve communication between different	LBHF / Derra	Short	3 months	Flood and Water Management Act /	LBHF	(Flood Risk Manager)	Council	EA, IWUL, IIL	Yes		
	LBHF						departments to create a more integrated approach				Flood Risk							
							and strategy for managing flood risk within the Borough.				Regulations							
			Borough Wide	High		<£25k	A strategy will be in place to determine how local	LBHF / Defra	Short	6 months		LBHF	Transport / Highways	Spatial	TWUL, TFL, EA, Local	Yes		
	Risk Management Strategy for the LBHF	local flood risk management of the area.					flood risk should be managed across the Borough				Management Act / Flood Risk		(Flood Risk Manager)	Planning Team	Residents			
											Regulations							
F6	Take forward existing and	Take forward existing and future local actions in the SWMP through the LBHF Flood Risk Management	Borough Wide	High		<£25k	Co-ordinated delivery of local flood risk management	LBHF / Defra	Medium	Ongoing	Flood and Water Management Act /	LBHF, RBKC	Transport / Highways (Flood Risk Manager)		TWUL, TFL, EA	Yes		
	Management Actions	Group and South West London Strategic Flood Group.					within the Borough and across the region				Flood Risk		(/ IOOG INISK WIBITAGET)					
	(under FWMA 2010 and from SWMP) in	Take forward existing and future strategic actions in the SWMP, including those involving multiple Boroughs or									Regulations							
Į,	collaboration with	other flood risk management authorities.																
	multiple Boroughs /	•																
F7	stakeholders Develop a Flood Risk	Produce and submit to the EA a Flood Risk	Borough Wide	High		<£25k	Identification of flood risk management across the	LBHF / Defra	Medium	6 months	Flood and Water	LBHF	Transport / Highways	EA	TWUL, TFL, EA, Local	Yes		
	Management Plan for the	Management Plan for the LBHF by 22 June 2015.	_				Borough and compliance with FRR 2009				Management Act /		(Flood Risk Manager)		Residents			
	LBHF as required under FRR 2009. Engage with										Flood Risk Regulations							
	the Environment Agency										. J							
	as required.																	
	Actively engage with	Undertake a survey to determine public option regarding	Borough Wide	High		<£25k	Identification of key public concerns and potential	LBHF / Defra	Medium	6 months	Flood and Water	LBHF	Transport / Highways			Yes		
	members of the public regarding local flood risk	flood risk.					additional flooding locations.				Management Act /		(Flood Risk Manager)	Council				
	management and										Flood Risk Regulations							
	formulation of the LFRM																	
F9	Strategy. Work with the EA to	Record and investigate groundwater flooding incidents	Borough Wide	Medium		<£25k	Improved understanding of groundwater flood risk	LBHF / Defra	Medium	Ongoing	Flood and Water	LBHF	Transport / Highways	EA		Yes		
	record and investigate	(initially in conjunction with the EA) to identify flooding					across the Borough. Evidence of management and			3. 3.	Management Act /		(Flood Risk Manager)					
	groundwater flooding incidents and	mechanisms and risk across the Borough.					recording of groundwater flooding events (now the responsibility of LLFAs).				Flood Risk Regulations							
	mechanisms										ů							
F10	Work with the EA to incorporate any findings	Ensure the findings and recommendations from the SWMP are incorporated into other fluvial / pluvial	Borough Wide	Medium		<£25k	Improved evidence of surface water flooding within statutory planning documents e.g. SFRA and any	LBHF / Defra	Medium	Ongoing	Flood and Water Management Act /	LBHF	Transport / Highways (Flood Risk Manager)	EA		Yes		
	from the SWMP into	modelling projects.					future modelling projects in the Borough.				Flood Risk		(Flood Risk Manager)					
	other fluvial / pluvial										Regulations							
F11	modelling projects Consider the	Work with Thames Water to incorporate the combined	Borough Wide	Medium	<£25k		Reduce limitations to the baseline model and allows	LBHF/ Thames Water	Medium	1 Year	Investigation /	LBHF	Transport / Highways	Service	EA (Fluvial), TWUL	No		
		sewer overflow pumping station losses from the baseline					for a more representative account of the sewer				Feasibility / Design		(Flood Risk Manager)	Providers	(Sewer), TfL (Highways),			
	Water Pumping Station rates into the SWMP	model once the data is made available.					networks within the baseline model.								Network Rail (Railways), Others as appropriate			
	when data becomes																	
	available. Work with Thames Water	Utilise the modelled data available from the Thames	Flooding hotspots	High	<£25k		Joint partnership approach to flood risk	LBHF/ Thames Water	Short	1 Year	Investigation /	LBHF	Transport / Highways	TWUL	EA (Fluvial), TWUL	No		
	to identify where areas of	Water Counters Creek Model and LBHF SWMP model	across the Borough				management.				Feasibility / Design		(Flood Risk Manager)		(Sewer), TfL (Highways),			
	surface water and sewer flooding coincide.	to identify areas where both surface water and sewer flooding are a concern.													Network Rail (Railways), Others as appropriate			
	3 · · · · · ·	3																
-13		In areas identified to be at risk of both surface water and		Medium		Unknown	Joint partnership approach to flood risk	LBHF/ Thames Water	Medium	2 Years	Investigation /	LBHF	Transport / Highways		EA (Fluvial), TWUL	No		
	to develop integrated solutions to manage	sewer flooding, develop integrated solutions to manage flood risk from both sources.	across the Borough				management.				Feasibility / Design		(Flood Risk Manager)	Planning Team	(Sewer), TfL (Highways), Network Rail (Railways),			
	flood risk.														Others as appropriate			
1/	Develop, update and	Review and update the draft Action Plan yearly to review	Borough Wide	Llink		-COEL	Established procedure for managing and agreeing	L BHE / Defro	Short	Ongoin =	Flood and Mate-	LBHF	Transport / Highways	Other Teams	-	Yes		
14	maintain the draft Action	and agree ongoing and future flood management	Dorough Wide	High		<±ZOK	on future flood mitigation and management across	LDI II / DEIIA	SHOIL	Ongoing	Flood and Water Management Act /	LOI II	(Flood Risk Manager)			100		
	Plan	actions for the LBHF.					LBHF.				Flood Risk							
15	Ensure required skills	Upskilling' training programme for appropriate	Borough Wide	High		Unknown	Increase skills in Council to deliver requirements	LBHF / Defra	Medium	2 Years	Regulations Financial /	LBHF	Transport / Highways	Other Teams	EA	Yes		
	and technical capability is	individuals or departments (as determined by the	_				under FWMA				Resourcing		(Flood Risk Manager)	as required				
	in place to deliver FWMA 2010 / FRR 2009	partnership structure) alongside Consultancy Support in the short-term where required																
	requirements	'														1		
F16	Identify local flood risk management funding	Collation and documenting of all potential funding routes (including Defra funding), including application	Borough Wide	High		<£25k	Improved understanding and identification of opportunities and mechanisms for acquiring future	LBHF / Defra	Short	6 months	Financial / Resourcing	LBHF	Transport / Highways (Flood Risk Manager)	Other Teams	EA	Yes		
	opportunities through	requirements and timeframes.					funding for local flood risk management activities				recounting		(. 1000 r tion (warrager)	ao roquirou				
	internal and external, existing and future,						and assist in identifying a programme for flood mitigation actions.											
	funding initiatives and						gaton dottorio.											
17	mechanisms Design and gain buy-in to	Produce a Communication Plan to identify how to	Borough Wide	High		<£25k	Greater transparency within the Borough on role as	I BHF / Defra	Short	Initially 3 months	- Communication /	LBHF	Transport / Highway	Communication	n EA, TWUL, TfL, GLA and	No		
	a Communication and	effectively communicate and raise awareness of risk to	us	igii		ZZZOK	LLFA and greater collective communication		0	Ongoing review a	s Partnerships			s Team, EA	other parties required as			
	Engagement Plan	different audiences using a clearly defined process for internal and external communication with stakeholders					approach to community			part of LFRM Stra Review	itegy			under Strategic Overview Role,	external partners			
		and the public.								Venem				London				
														Councils				
F18	Internal proactive	Include planners and planning policy influencers in	Borough Wide	High		<£25k	Raise awareness of surface water flood risk (and	LBHF / Defra	Short	6 months	Communication /	LBHF	Transport / Highways	Spatial	London Councils, GLA,	No		
	awareness raising of	awareness raising activities as set out in the					flooding hotspots) amongst Planners and influence				Partnerships		(Flood Risk Manager)	Planning Team				
	Local Flood Risk Management	Communications Plan.					planning policies to prevent the creation of new risk areas.											
19	Actively engage with	Engage professional stakeholder as appropriate to	Borough Wide	High			Raise awareness of surface water flood risk and	LBHF / Defra	Short	6 months	Communication /	LBHF	Transport / Highways	Communication	n EA, TWUL	No		
	professional stakeholders to communicate findings						generate opportunities for joint partnership for future flood mitigation works.				Partnerships		(Flood Risk Manager)	S				
	of SWMP and local flood																	
	risk management.																	
	Anthonic and Dec	Francisco de la constanta de l	December W//	1.50				LDUE / D-f	Ohart	0	0	LDUE	Towns of Co.	Landa	Transport 5	NI-		
	Actively engage political stakeholders	Engage political stakeholders as appropriate within formal political structures and communication protocols	Borough Wide	High		<£25k	Ensure political acceptance and buy in is achieved and that political influence is used positively to	LBHF / Defra	Short	6 months	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)	London Councils GLA	Transport, Environment and Resident's Services	NO		
		as determined in the Communication Plan					support and fund flood risk actions								Scrutiny Committee			
	Ozarlana i mi	unungragate upperper flooding incidents have occurred in	i Figoging hotspots	High	<£25k	1	Validate model outputs and gain resident 'buy in' to	LBHF / Defra	Medium	1 Year	Investigation /	LBHF	Transport / Highways	Local	EA (Fluvial), TWUL	NO		
1	Continue to validate SWMP model outputs	Investigate whether flooding incidents have occurred in flooding hotspots through undertaking a survey of local	across the Borough				surface water flood risk in areas. Opportunities raise				Feasibility / Design		(Flood RISK Wanager)	Residents	(Sewer), TfL (Highways)			
ľ	Continue to validate SWMP model outputs	flooding hotspots through undertaking a survey of local residents (e.g. mail drop, door knocking) and confirming drainage capacity assumptions with third party asset	across the Borough				surface water flood risk in areas. Opportunities raise awareness of surface water flood risk with residents.				Feasibility / Design		(Flood Risk Manager)	Residents	(Sewer), TfL (Highways), Network Rail (Railways), Others as appropriate			

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ID	Action				Cost				Timing			R	esponsibility			Review	
What?	How?	Where?	Priority Ranking	Investigation / Feasibility	Capital	Other Benefit	Potential Funding Source	Timeframe	Start Date	Approx. Duration	Action Type	Lead Organisation	LLFA Dept.	Primary Support	Other Stakeholders	Frequency	Review Date
LBHF22 Determine resilience of Critical Services	Determine whether services (e.g. power, telecommunications) are resilient to surface water flooding through providing outputs of Drain London to critical services providers (including energy providers)	Borough Wide	Medium	<£25k		Refine understanding of flood risk to critic Improved evidence to prioritise localised d improvements.		Medium	6	6 months	Investigation / Feasibility / Design	LBHF	Emergency Planning / Civil Contingencies	Service Providers	Transport / Highways	No	
LBHF23 Review Emergency Response procedures	and meet to discuss the overall resilience of service Determine whether current emergency response to Borough-wide surface water flooding are appropriate through reviewing the Multi-Agency Flood Plan in the context of the Drain London outputs and involving key transport providers such as TfL and Network Rail	Borough Wide	Medium	<£25k		Emergency Response procedures are bas available information	sed on best LBHF / Defra	Short	3	3 months	Investigation / Feasibility / Design	LBHF	Emergency Planning / Civil Contingencies	Local Resilience Forum	EA, TWUL, TfL, Network Rail	No	
LBHF24 Consider opportunities for Raising Community Awareness		Borough Wide	High		<	Increase awareness of flood risk in commutherefore improving resilience to flooding a encouragement to implement property-lev mitigation measures	and	Medium	C	Ongoing	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)		n Local Residents	No	
Awareness - undertake a	Undertake a letter drop to highlight the improvement works that have been implemented as well as works that are planned for the future.	Borough Wide	Low		<	######################################	and	Medium	3	3 months	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)		n Local Residents	No	
Awareness - hold a public meeting	Hold a public meeting following the letter drop where residents can highlight any issues. This could include a talk on the work that is being undertaken and who is responsible. Such a meeting should also outline how residents can help themselves and highlight their responsibility for maintaining private drainage, soakaways, driveway drainage etc.	Borough Wide	Low		<	horease awareness of flood risk in committeefore improving resilience to flooding a encouragement to implement property-lev mitigation measures	and	Medium	3	3 months	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)		n Local Residents	No	
'Information portal'	Develop an 'Information Portal' via the LBHF website, for local flood risk information including links to the relevant EA web pages that provide advice on measures that can be taken by residents to mitigate surface water flooding to / around their property.	Borough Wide	Low		L	Increase awareness of flood risk in commit therefore improving resilience to flooding a encouragement to implement property-lev mitigation measures	and	Medium	I	year	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)	Communication s Team	n	No	
LBHF28 Raise Community Awareness - Identify areas where Community Flood Plans my be effective and consider opportunities to develop these, in conjunction with the local community	Consider preparing a Community Flood Plan for those communities identified to be at high risk.	Communities identified to be at risk throughout the Borough (flooding hotspots).	Low		<	Increase awareness of flood risk in commit therefore improving resilience to flooding a encouragement to implement property-lev mitigation measures	and	Medium	1	1 year	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)	EA (Fluvial), TWUL (Sewer)	Local Residents	No	
Improvements to the Maintenance of the	Identify opportunities for improving the maintenance of the drainage network through, for example, targeting known problem areas (e.g. flooding hotspots, blocked gullies), improving the coordination and timing of gulley cleansing, or increasing infiltration for sports grounds through aerating pitches.	Borough Wide	High		<	Existing drainage systems are maximised operating at full potential, to ensure floodi exacerbated through blocked or part-workles networks	ng is not	Short	6	6 months	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Operations	TWUL, TfL	No	
to the Maintenance of the Drainage Network -	Gullies that are known to flood could be painted yellow to encourage residents to check if they are blocked and to avoid parking directly over them thereby preventing access for gully clearing team.	Borough Wide	Low		Unknown	Existing drainage systems are maximised operating at full potential, to ensure floodin exacerbated through blocked or part-work networks	ng is not	Medium		Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Operations	TWUL, TfL	No	
LBHF31 Ongoing Improvements to the Maintenance of the Drainage Network -	Improved and targeted maintenance. Ensure flooding hotspots are targeted for cleaning at least once a year, prior to 'tainfall' season. Focus attention on the maintenance of gully pots in the identified flooding hotspots which are considered to be high risk and on those areas identified as being at risk from blocked	Borough Wide	Medium		Unknown	Existing drainage systems are maximised operating at full potential, to ensure floodi exacerbated through blocked or part-workinetworks	ng is not	Medium	C	Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Operations	TWUL, TfL	No	
for the implementation of		Borough Wide	Medium	Unknown		Flood risk mitigation & additional environn benefits in the long term.	mental LBHF / Defra	Medium	1	1 year	Investigation / Feasibility / Design	LBHF	Transport / Highways (Flood Risk Manager)		Council Property Management Team	No	
LBHF33 Consider opportunities for the modification of existing tree planters and development of new tree planters across the borough.	Feasibility study to determine suitable tree planter areas to be modified.	Borough Wide	Medium	Unknown		Flood risk mitigation & additional environn benefits in the long term.	mental LBHF / Defra	Medium	1	1 year	Investigation / Feasibility / Design	LBHF	Transport / Highways (Flood Risk Manager)		Local residents groups	No	
LBHF34 Liaise with relevant	Utilise maintenance regimes in place within other council departments to outline a phase approach to implementation and potential funding arrangements.	Borough Wide	Medium	Unknown		Flood risk mitigation & additional environn benefits in the long term.	nental LBHF / Defra	Medium	1	1 year	Communication / Partnerships		Transport / Highways (Flood Risk Manager)	Parks/Street Maintenance	Local residents groups	No	
study for potential	Use SWMP modelled outputs as an indication of potential flood mechanisms. Undertake a detailed analysis of a specific areas to determine feasibility.	Flooding hotspots across the Borough	Medium	<£25k		Potential flood risk mitigation to flooding h	notspots. LBHF / Defra	Medium	1	1 year	Investigation / Feasibility / Design	LBHF	Transport / Highways (Flood Risk Manager)	TWUL	Parks Team; residents groups	No	
incorporation of permeable paving systems across council owned open space.	Undertake feasibility study, incorporating local geology, to determine the type and location of permeable paving measures.	Borough Wide	Medium	<£25k		Potential for flood mitigation with wide so implementation.	ale LBHF / Defra	Medium	1	1 year	Investigation / Feasibility / Design	LBHF	Transport / Highways (Flood Risk Manager)		Council Property Management Team, Parks Team, other as required.	No	
LBHF37 Liaise with relevant council departments to determine process for implementation of permeable paving.	Utilise maintenance regimes in place within other council departments to outline a phase approach to implementation and potential funding arrangements.	Borough Wide	Medium	Unknown		Flood risk mitigation & additional environn benefits in the long term.	mental LBHF / Defra	Medium	1	1 year	Communication / Partnerships	LBHF	Transport / Highways (Flood Risk Manager)	Spatial Planning Team	Council Property Management Team, Parks Team, other as required.	No	
Policy for repaving of gardens / driveways	Ensure that policies are in place (where possible) to provide permeable surfaces when driveways / patios other property-level hard surfaces are being repaved, or gardens are being paved over. Where possible, follow up repaving post implementation to ensure it has been completed to the correct specifications.	Borough Wide	Medium			Flood risk to properties and surrounding p is not exacerbated through implementing hardstanding, impermeable surfaces		Medium		LDF Plan Period	·	LBHF	Development Control	Planning Team		No	
Garden Repaving - surface water runoff within property boundary	Encourage residents to ensure that paved areas in front gardens drain onto flower beds rather than running onto the highway.	-	Low			Flood risk to properties and surrounding p is not exacerbated through implementing hardstanding, impermeable surfaces		Medium		Ongoing	Communication / Partnerships	LBHF	Development Control	Planning Team		No	
LBHF40 Development Control Policy - Driveway / Garden Repaving - raise awareness of options LBHF41 Development Control		Borough Wide	Low			Flood risk to properties and surrounding p is not exacerbated through implementing hardstanding, impermeable surfaces Plood risk to properties and surrounding p		Medium Medium		Ongoing	Communication / Partnerships	LBHF		s Team	n Spatial Planning Team n Spatial Planning Team	No No	
Policy - Driveway / Garden Repaving -	Provide an information portal that residents can consult for further information on permeable paving and other SuDS measures, including links to other organisations (e.g. EA) who can provide 'best practice' guidance and examples	Dolough Wide	Low			Inknown Flood risk to properties and surrounding p is not exacerbated through implementing hardstanding, impermeable surfaces		weddii		Ongoing	Communication / Partnerships	CO: II	Severapment Control	s Team	mopatiai Fiairillig 18airi		

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ID		Action			CostTimingResponsibility							esponsibility		view				
	What?	How?	Where?	Priority Ranking	Investigation / Capital	ther Benefit	Potential Funding Source	Timeframe	Start	Approx. Duration	Action Type	Lead Organisation	LLFA Dept.	Primary	Other Stakeholders	EU Related?	Frequency	Next Review
LBHF42	Development Control Policy - Driveway /	Education/training of Council staff to ensure that planning officers:	Borough Wide	Low	Feasibility Ur	known Flood risk to properties and surrounding properties is not exacerbated through implementing	LBHF / Defra	Medium	Date	Ongoing	Financial / Resourcing	LBHF	Development Control	Support Communication s Team	Spatial Planning Team	No	rrequency	Date
	Garden Repaving - education of Council staf	are aware of the existing planning permissions, guidance and best practice: are in a position to educate the public if enquiries are made regarding planning permission to change their drive/garder; and can identify/enforce for non-compliance or non permitted conversion (in particular in flooding hotspots				hardstanding, impermeable surfaces												
LBHF43	Ensure Development	where it exacerbates the problem). Through Development Control Policy, ensure that in	Flooding hotspots	High	<f< td=""><td>25k Mid-long term reduction in the consequences of</td><td>LBHF / Defra</td><td>Medium</td><td></td><td>LDF Plan Period</td><td>Policy Action</td><td>LBHF</td><td>Development Control</td><td>Spatial</td><td>EA, TWUL</td><td>No</td><td></td><td></td></f<>	25k Mid-long term reduction in the consequences of	LBHF / Defra	Medium		LDF Plan Period	Policy Action	LBHF	Development Control	Spatial	EA, TWUL	No		
	Control Policy Incorporates Surface Water Flood Risk	flooding hotspots, SWMP mapped outputs are used to require developers to demonstrate compliance with NPPF by ensuring development will remain safe and will not increase risk to others, where necessary supported by more detailed integrated hydraulic modelling.	across the Borough			flooding					,		,	Planning Team				
LBHF44	Ensure development Control Policy incorporates Surface Water Management	Through Development Control Policy, ensure that new developments are achieving the required surface water attenuation measures to manage surface water runoff from the site. Where necessary, this should be supported by detailed drainage design.	Borough Wide.	High	<6	Mid-long term reduction in the consequences of flooding	LBHF / Defra	Medium		LDF Plan Period	Policy Action	LBHF	Development Control	Spatial Planning Team	EA, TWUL	No		
LBHF45		Amend policy to account for properties at potential risk of surface water and sewer flooding. Set requirements for flood resistant and flood resilient measures to be incorporated into the development.		High	<1	Reduce risk to properties.	LBHF	Medium		Ongoing	Policy Action	LBHF	Development Control	Spatial Planning Team	EA, TWUL	No		
LBHF46	promote rainwater harvesting in both new	Consider options and opportunities for promotion of rainwater harvesting systems in existing and new developments and potential incentive schemes for t developers / commercial properties to install these.	Borough Wide	High	4	Potential for localised reduction in surface water flooding during rainfall events and water conservation. Educational opportunities where systems are fitted to schools / public buildings.	LBHF / Defra	Medium		Ongoing	Flooding Mitigation Action	LBHF	Development Control	Spatial Planning Team, Transport / Highways (Flood Risk Manager)	TWUL	No		
LBHF47	incentive scheme for use	Consider providing an incentive scheme for the use of rainwater harvesting systems across the Borough. This may be linked to the Council's sustainability checklist.		Low	Unknown	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts, and provides educational opportunities where systems are fitted to schools / public buildings.		Medium		Ongoing	Flooding Mitigation Action	LBHF	Development Control	Spatial Planning Team, Transport / Highways (Flood Risk Manager)	TWUL	No		
LBHF48	Rainwater Harvesting - retrofitting of rainwater harvesting schemes	Consider retrofitting rainwater hanvesting systems on Council owned properties, such as schools, for example, which offer educational opportunities as well as local surface water flood mitigation.	Borough Wide	Low	Unknown	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts, and provides educational opportunities where systems are fitted to schools / public buildings.		Medium		Ongoing	Flooding Mitigation Action	LBHF	Development Control	Spatial Planning Team, Transport / Highways (Flood Risk Manager)	TWUL	No		
LBHF49	Rainwater Harvesting - installation of rainwater harvesting schemes in new development	Explore the potential opportunities for the installation of rainwater harvesting systems on new or regenerated development areas (in particular where there is high footfall / potential for use).	Borough Wide, New Development Sites	Medium	Unknown	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts, and provides educational opportunities where systems are fitted to schools / public buildings.		Medium		Ongoing	Flooding Mitigation Action	LBHF	Development Control	Spatial Planning Team	TWUL	No		
	promote use of water butts in both new and existing development throughout the Borough.	Consider options and opportunities for promotion of property-level water butts in existing and new developments, and opportunities for promoting these to local residents.	Borough Wide	High	<1	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts.	LBHF / Defra	Medium		Ongoing	Flooding Mitigation Action	LBHF	Development Control	Spatial Planning Team	TWUL	No		
	Water Butts - retrofitting water butts to existing developments	development. This provides supplementary benefits beyond regeneration and redevelopment sites (volumetric reduction with opportunity for complimentary water quality improvements).		Low	Unknown	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts.		Medium		Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Spatial Planning Team	TWUL	No		
	Water Butts - promotion of water butts across Borough	Consider promoting the use of water butts across the Borough and provide information (either directly or through links to external websites) on potential costs, installation and benefits.	Borough Wide	Low	<£	Potential for localised reduction in peak surface water discharge during rainfall events. Is likely to have positive sustainability and water conservation impacts.		Medium		Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Communication s Team		No		
LBHF53	promote awareness of property level flood	Consider options and opportunities for promotion of property-level flood mitigation measures such as raising property-level thresholds in new developments, particularly in those areas of higher flood risk.	Borough Wide	High	- d	Improved property-level resilience to surface water flooding.	LBHF / Defra	Medium		Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Spatial Planning Team	EA, TWUL	No		
LBHF54		Work with residents to realise suitable, sensible and cost effective property level resilience to potential flooding (through, for installation of flood doors), particularly in areas where roads / properties are known / identified to be susceptible to surface water flooding.	Borough Wide	Low	Unknown	Improved property-level resilience to surface water flooding.	LBHF / Defra / GiA / Local Levy	Medium		Ongoing	Flooding Mitigation Action	LBHF	Transport / Highways (Flood Risk Manager)	Spatial Planning Team	EA, TWUL	No		

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